County Administrator's Office

Engineering Department
340 South Sixth Street – Administration Building
Wytheville, VA 24382-2598
Telephone (276) 223-4500
FAX (276) 223-4515

R. Cellell Dalton
County Administrator

William E. Vaughan, PE
County Engineer

Rhonda L. Vaught
Secretary

August 18, 2014

Virginia Department of Environmental Quality
Southwest Regional Office
Attn: Mr. Frederick Wyatt
355-A Deadmore Street
Abingdon, Virginia 24210

Subject: INITIAL SLUDGE PERMIT APPLICATION ICO SHORTS CREEK WWTP

Dear Mr. Wyatt:

Please find enclosed the subject application documents per our conversation of July 10th which compliments the initial VPDES permit application submitted on June 30th.

Point of contact is the undersigned at (276) 223-4500, or wevaughan@wytheco.org. Your help in this matter is greatly appreciated.

Sincerely,

William E. Vaughan, PE
County Engineer

Enclosures

Cc: Mr. Wayne Morgan, Pentree, Inc.
Bcc: Mr. Don Crisp, Wythe County

DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER DIVISION PERMIT APPLICATION FEE FORM

FEES EFFECTIVE JANUARY 1, 2008

INSTRUCTIONS

Applicants for individual Virginia Pollutant Discharge Elimination System (VPDES), Virginia Pollution Abatement (VPA), Virginia Water Protection (VWP), Surface Water Withdrawal (SWW), and Groundwater Withdrawal (GW) permits are required to pay permit application fees, except farming operations engaged in production for market. Fees are also required for registration for coverage under general permits, except for the general permits for Domestic Sewage Discharges of 1,000 GPD or less (VAG40), and for Petroleum Contaminated Sites, Groundwater Remediation, and Hydrostatic Tests (VAG83).

The permit fee schedule is included on the back of this form, and includes fees for permit issuance, reissuance*, and for permit modification. Except for VWP permits, fees must be paid when applications are submitted. Applicants for VWP permits will be notified by the DEQ of the fee due. Applications will be considered incomplete if the proper fee is not paid and will not be processed until the fee is received.

* Note: the reissuance fee does not apply to individual VPDES and VPA permits - see the fee schedule for details.

Once you have determined the fee for the type of application you are submitting, complete this form. The form and your check or money order payable to "Treasurer of Virginia" should be mailed to:

Department of Environmental Quality
Receipts Control
P.O. Box 1104
Richmond, VA 23218

COPY FOR YOUR INFORMATION

You should retain a copy of the form and your check for your records. Please direct any questions regarding this form or fee payment to the DEQ Office to which you are submitting your application.

APPLICANT NAME: Wythe County Board of Supervisors

ADDRESS: 340 South Sixth Street

Wytheville VA 24382

DAYTIME PHONE: (276) 223 - 4500
Area Code

IRS Employer Identification Number (EIN): 546002871
[*aka* Federal Tax Identification Number (FIN)]

FACILITY/ACTIVITY NAME: SHORTS CREEK WASTEWATER TREATMENT PLANT

LOCATION: AUSTINVILLE, VIRGINIA

TYPE OF PERMIT APPLIED FOR: VPDES Municipal Minor / 10,001 GPD - 100,000 GPD
(from Fee Schedule - see back of form)

TYPE OF ACTION: ☑ **New Issuance** ☐ **Reissuance** ☐ **Modification**

AMOUNT OF FEE SUBMITTED (from Fee Schedule): $ 6,000.00

EXISTING PERMIT NUMBER (if applicable):

DEQ OFFICE TO WHICH APPLICATION OR REGISTRATION SUBMITTED (check one)

☑ Abingdon/SWRO	☐ Harrisonburg/VRO	☐ Woodbridge/NRO	☐ Lynchburg/BRRO-L
☐ Richmond/PRO	☐ Richmond/Headquarters	☐ Roanoke/BRRO-R	☐ Virginia Beach/TRO

FOR DEQ USE ONLY
Date: _____ **DC #:** _____

Form Revised May 5, 2014

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DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER DIVISION PERMIT APPLICATION FEE FORM

FEES EFFECTIVE JANUARY 1, 2008

INSTRUCTIONS

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P.O. Box 1104
Richmond, VA 23218

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APPLICANT NAME: Wythe County Board of Supervisors Cust 44445

ADDRESS: 340 South Sixth Street Inv 74297

Wytheville VA 24382

DAYTIME PHONE: (276) 223 - 4500 (Area Code)

IRS Employer Identification Number (EIN): [*aka* Federal Tax Identification Number (FIN)] 546002871

FACILITY/ACTIVITY NAME: SHORTS CREEK WASTEWATER TREATMENT PLANT

LOCATION: AUSTINVILLE, VIRGINIA

TYPE OF PERMIT APPLIED FOR: (from Fee Schedule - see back of form) VPDES Municipal Minor / 10,001 GPD - 100,000 GPD

TYPE OF ACTION: ☑ New Issuance ☐ Reissuance ☐ Modification

AMOUNT OF FEE SUBMITTED (from Fee Schedule): $ 6,000.00

EXISTING PERMIT NUMBER (if applicable):

DEQ OFFICE TO WHICH APPLICATION OR REGISTRATION SUBMITTED (check one)

☑ Abingdon/SWRO	☐ Harrisonburg/VRO	☐ Woodbridge/NRO	☐ Lynchburg/BRRO-L
☐ Richmond/PRO	☐ Richmond/Headquarters	☐ Roanoke/BRRO-R	☐ Virginia Beach/TRO

FOR DEQ USE ONLY
Date: 7-8-14 DC #: 54401234

Form Revised May 5, 2014

FACILITY NAME AND PERMIT NUMBER:
Shorts Creek Wastewater Treatment Plant

Form Approved 1/14/99
OMB Number 2040-0086

FORM 2A NPDES

NPDES FORM 2A APPLICATION OVERVIEW

APPLICATION OVERVIEW

Form 2A has been developed in a modular format and consists of a "Basic Application Information" packet and a "Supplemental Application Information" packet. The Basic Application Information packet is divided into two parts. All applicants must complete Parts A and C. Applicants with a design flow greater than or equal to 0.1 mgd must also complete Part B. Some applicants must also complete the Supplemental Application Information packet. The following items explain which parts of Form 2A you must complete.

BASIC APPLICATION INFORMATION:

A. **Basic Application Information for all Applicants.** All applicants must complete questions A.1 through A.8. A treatment works that discharges effluent to surface waters of the United States must also answer questions A.9 through A.12.

B. **Additional Application Information for Applicants with a Design Flow ≥ 0.1 mgd.** All treatment works that have design flows greater than or equal to 0.1 million gallons per day must complete questions B.1 through B.6.

C. **Certification.** All applicants must complete Part C (Certification).

SUPPLEMENTAL APPLICATION INFORMATION:

D. **Expanded Effluent Testing Data.** A treatment works that discharges effluent to surface waters of the United States and meets one or more of the following criteria must complete Part D (Expanded Effluent Testing Data):

1. Has a design flow rate greater than or equal to 1 mgd,
2. Is required to have a pretreatment program (or has one in place), or
3. Is otherwise required by the permitting authority to provide the information.

E. **Toxicity Testing Data.** A treatment works that meets one or more of the following criteria must complete Part E (Toxicity Testing Data):

1. Has a design flow rate greater than or equal to 1 mgd,
2. Is required to have a pretreatment program (or has one in place), or
3. Is otherwise required by the permitting authority to submit results of toxicity testing.

F. **Industrial User Discharges and RCRA/CERCLA Wastes.** A treatment works that accepts process wastewater from any significant industrial users (SIUs) or receives RCRA or CERCLA wastes must complete Part F (Industrial User Discharges and RCRA/CERCLA Wastes). SIUs are defined as:

1. All industrial users subject to Categorical Pretreatment Standards under 40 Code of Federal Regulations (CFR) 403.6 and 40 CFR Chapter I, Subchapter N (see instructions); and
2. Any other industrial user that:
   a. Discharges an average of 25,000 gallons per day or more of process wastewater to the treatment works (with certain exclusions); or
   b. Contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the treatment plant; or
   c. Is designated as an SIU by the control authority.

G. **Combined Sewer Systems.** A treatment works that has a combined sewer system must complete Part G (Combined Sewer Systems).

ALL APPLICANTS MUST COMPLETE PART C (CERTIFICATION)

Disclaimer

This is an updated PDF document that allows you to type your information directly into the form and to save the completed form. This form is the most updated form currently available.

Note: This form can be viewed and saved only using Adobe Acrobat Reader version 7.0 or higher, or if you have the full Adobe Professional version.

Instructions:

1. Type in your information
2. Save file (if desired)
3. Print the completed form
4. Sign and date the printed copy
5. Mail it to the directed contact.

BASIC APPLICATION INFORMATION

PART A. BASIC APPLICATION INFORMATION FOR ALL APPLICANTS:

All treatment works must complete questions A.1 through A.8 of this Basic Application Information packet.

A.1. Facility Information.

Facility name: Shorts Creek Wastewater Treatment Plant

Mailing Address: c/o Fort Chiswell Wastewater Treatment Plant, 631 Locust Hill Road, Max Meadows VA 24360

Contact person: Mr. Don Crisp

Title: Water and Wastewater Department Head

Telephone number: (223) 276-4500

Facility Address (not P.O. Box): 911 address to be assigned. Site is near the intersection of US Route 52 and Castleton Road (SR 607)

A.2. Applicant Information. If the applicant is different from the above, provide the following:

Applicant name: Wythe County Board of Supervisors

Mailing Address: 340 South Sixth Street, Wytheville VA 24382

Contact person: Mr. Cellell Dalton

Title: County Administrator

Telephone number: (275) 223-4500

Is the applicant the owner or operator (or both) of the treatment works?

✓ owner ✓ operator

Indicate whether correspondence regarding this permit should be directed to the facility or the applicant.

_____ facility ✓ applicant

A.3. Existing Environmental Permits. Provide the permit number of any existing environmental permits that have been issued to the treatment works (include state-issued permits).

NPDES		PSD	
UIC		Other	
RCRA		Other	

A.4. Collection System Information. Provide information on municipalities and areas served by the facility. Provide the name and population of each entity and, if known, provide information on the type of collection system (combined vs. separate) and its ownership (municipal, private, etc.).

Name	Population Served	Type of Collection System	Ownership
I-77 Exit 24 Area	1000	Separate	Wythe County
Total population served	1000		

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FACILITY NAME AND PERMIT NUMBER:
Shorts Creek Wastwater Treatment Plant

A.5. Indian Country.

a. Is the treatment works located in Indian Country?

_____ Yes ✓ No

b. Does the treatment works discharge to a receiving water that is either in Indian Country or that is upstream from (and eventually flows through) Indian Country?

_____ Yes ✓ No

A.6. Flow. Indicate the design flow rate of the treatment plant (i.e., the wastewater flow rate that the plant was built to handle). Also provide the average daily flow rate and maximum daily flow rate for each of the last three years. Each year's data must be based on a 12-month time period with the 12th month of "this year" occurring no more than three months prior to this application submittal.

a. Design flow rate 0.04 mgd

	Two Years Ago	Last Year	This Year	
b. Annual average daily flow rate				mgd
c. Maximum daily flow rate				mgd

A.7. Collection System. Indicate the type(s) of collection system(s) used by the treatment plant. Check all that apply. Also estimate the percent contribution (by miles) of each.

✓ Separate sanitary sewer 100 %

_____ Combined storm and sanitary sewer _____ %

A.8. Discharges and Other Disposal Methods.

a. Does the treatment works discharge effluent to waters of the U.S.? ✓ Yes _____ No

If yes, list how many of each of the following types of discharge points the treatment works uses:

i. Discharges of treated effluent 1

ii. Discharges of untreated or partially treated effluent _____

iii. Combined sewer overflow points _____

iv. Constructed emergency overflows (prior to the headworks) _____

v. Other _____ _____

b. Does the treatment works discharge effluent to basins, ponds, or other surface impoundments that do not have outlets for discharge to waters of the U.S.? _____ Yes ✓ No

If yes, provide the following for each surface impoundment:

Location: _____

Annual average daily volume discharged to surface impoundment(s) _____ mgd

Is discharge _____ continuous or _____ intermittent?

c. Does the treatment works land-apply treated wastewater? _____ Yes ✓ No

If yes, provide the following for each land application site:

Location: _____

Number of acres: _____

Annual average daily volume applied to site: _____ Mgd

Is land application _____ continuous or _____ intermittent?

d. Does the treatment works discharge or transport treated or untreated wastewater to another treatment works? _____ Yes ✓ No

If yes, describe the mean(s) by which the wastewater from the treatment works is discharged or transported to the other treatment works (e.g., tank truck, pipe).

If transport is by a party other than the applicant, provide:

Transporter name:

Mailing Address:

Contact person:

Title:

Telephone number:

For each treatment works that receives this discharge, provide the following:

Name:

Mailing Address:

Contact person:

Title:

Telephone number:

If known, provide the NPDES permit number of the treatment works that receives this discharge.

Provide the average daily flow rate from the treatment works into the receiving facility. mgd

e. Does the treatment works discharge or dispose of its wastewater in a manner not included in A.8.a through A.8.d above (e.g., underground percolation, well injection)? Yes ✓ No

If yes, provide the following for each disposal method:

Description of method (including location and size of site(s) if applicable):

Annual daily volume disposed of by this method:

Is disposal through this method continuous or intermittent?

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FACILITY NAME AND PERMIT NUMBER:
Shorts Creek Wastwater Treatment Plant

WASTEWATER DISCHARGES:

If you answered "yes" to question A.8.a, complete questions A.9 through A.12 **once for each outfall** (including bypass points) through which effluent is discharged. Do not include information on combined sewer overflows in this section. **If you answered "no" to question A.8.a**, go to Part B, "Additional Application Information for Applicants with a Design Flow Greater than or Equal to 0.1 mgd."

A.9. Description of Outfall.

a. Outfall number: TBD

b. Location:
Austinville (City or town, if applicable) — 24312 (Zip Code)
Wythe (County) — Virginia (State)
N 36 51 12 (36.853291) (Latitude) — W 80 51 32 (-80.858952) (Longitude)

c. Distance from shore (if applicable): _____ ft.

d. Depth below surface (if applicable): _____ ft.

e. Average daily flow rate: 0.04 mgd

f. Does this outfall have either an intermittent or a periodic discharge? _____ Yes ✓ No (go to A.9.g.)

If yes, provide the following information:

Number of times per year discharge occurs: _____

Average duration of each discharge: _____

Average flow per discharge: _____ mgd

Months in which discharge occurs: _____

g. Is outfall equipped with a diffuser? _____ Yes ✓ No

A.10. Description of Receiving Waters.

a. Name of receiving water: Shorts Creek

b. Name of watershed (if known): New River

United States Soil Conservation Service 14-digit watershed code (if known): NE25

c. Name of State Management/River Basin (if known): New River

United States Geological Survey 8-digit hydrologic cataloging unit code (if known): 05050001

d. Critical low flow of receiving stream (if applicable):
acute 2.6 cfs chronic 3.2 cfs

e. Total hardness of receiving stream at critical low flow (if applicable): _____ mg/l of $CaCO_3$

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FACILITY NAME AND PERMIT NUMBER:
Shorts Creek Wastwater Treatment Plant

A.11. Description of Treatment.

a. What levels of treatment are provided? Check all that apply.

_____ Primary ✓ Secondary

_____ Advanced _____ Other. Describe: _____

b. Indicate the following removal rates (as applicable):

Design BOD_5 removal or Design $CBOD_5$ removal	88.0	%
Design SS removal	86.3	%
Design P removal		%
Design N removal	87.5	%
Other _____		%

c. What type of disinfection is used for the effluent from this outfall? If disinfection varies by season, please describe.

To be determined.

If disinfection is by chlorination, is dechlorination used for this outfall? _____ Yes ✓ No

d. Does the treatment plant have post aeration? _____ Yes ✓ No

A.12. Effluent Testing Information. All Applicants that discharge to waters of the US must provide effluent testing data for the following parameters. Provide the indicated effluent testing required by the permitting authority for each outfall through which effluent is discharged. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136. At a minimum, effluent testing data must be based on at least three samples and must be no more than four and one-half years apart.

Outfall number: TBD

PARAMETER	MAXIMUM DAILY VALUE		AVERAGE DAILY VALUE		
	Value	Units	Value	Units	Number of Samples
pH (Minimum)		s.u.			
pH (Maximum)		s.u.			
Flow Rate	40000	gpd			
Temperature (Winter)					
Temperature (Summer)					

* For pH please report a minimum and a maximum daily value

POLLUTANT		MAXIMUM DAILY DISCHARGE		AVERAGE DAILY DISCHARGE			ANALYTICAL METHOD	ML / MDL
		Conc.	Units	Conc.	Units	Number of Samples		
CONVENTIONAL AND NONCONVENTIONAL COMPOUNDS.								
BIOCHEMICAL OXYGEN	BOD-5	30	mg/l					
DEMAND (Report one)	CBOD-5							
FECAL COLIFORM								
TOTAL SUSPENDED SOLIDS (TSS)		30	mg/l					

END OF PART A.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

BASIC APPLICATION INFORMATION

PART B. ADDITIONAL APPLICATION INFORMATION FOR APPLICANTS WITH A DESIGN FLOW GREATER THAN OR EQUAL TO 0.1 MGD (100,000 gallons per day).

All applicants with a design flow rate ≥ 0.1 mgd must answer questions B.1 through B.6. All others go to Part C (Certification).

B.1. Inflow and Infiltration. Estimate the average number of gallons per day that flow into the treatment works from inflow and/or infiltration.

_____gpd

Briefly explain any steps underway or planned to minimize inflow and infiltration.

_____

_____

B.2. Topographic Map. Attach to this application a topographic map of the area extending at least one mile beyond facility property boundaries. This map must show the outline of the facility and the following information. (You may submit more than one map if one map does not show the entire area.)

a. The area surrounding the treatment plant, including all unit processes.

b. The major pipes or other structures through which wastewater enters the treatment works and the pipes or other structures through which treated wastewater is discharged from the treatment plant. Include outfalls from bypass piping, if applicable.

c. Each well where wastewater from the treatment plant is injected underground.

d. Wells, springs, other surface water bodies, and drinking water wells that are: 1) within 1/4 mile of the property boundaries of the treatment works, and 2) listed in public record or otherwise known to the applicant.

e. Any areas where the sewage sludge produced by the treatment works is stored, treated, or disposed.

f. If the treatment works receives waste that is classified as hazardous under the Resource Conservation and Recovery Act (RCRA) by truck, rail, or special pipe, show on the map where that hazardous waste enters the treatment works and where it is treated, stored, and/or disposed.

B.3. Process Flow Diagram or Schematic. Provide a diagram showing the processes of the treatment plant, including all bypass piping and all backup power sources or redundancy in the system. Also provide a water balance showing all treatment units, including disinfection (e.g, chlorination and dechlorination). The water balance must show daily average flow rates at influent and discharge points and approximate daily flow rates between treatment units. Include a brief narrative description of the diagram.

B.4. Operation/Maintenance Performed by Contractor(s).

Are any operational or maintenance aspects (related to wastewater treatment and effluent quality) of the treatment works the responsibility of a contractor? ____Yes ____No

If yes, list the name, address, telephone number, and status of each contractor and describe the contractor's responsibilities (attach additional pages if necessary).

Name: _____

Mailing Address: _____

_____

Telephone Number: _____

Responsibilities of Contractor: _____

B.5. Scheduled Improvements and Schedules of Implementation. Provide information on any uncompleted implementation schedule or uncompleted plans for improvements that will affect the wastewater treatment, effluent quality, or design capacity of the treatment works. If the treatment works has several different implementation schedules or is planning several improvements, submit separate responses to question B.5 for each. (If none, go to question B.6.)

a. List the outfall number (assigned in question A.9) for each outfall that is covered by this implementation schedule.

_____

b. Indicate whether the planned improvements or implementation schedule are required by local, State, or Federal agencies.

____Yes ____No

c If the answer to B.5.b is "Yes," briefly describe, including new maximum daily inflow rate (if applicable).

_____

d. Provide dates imposed by any compliance schedule or any actual dates of completion for the implementation steps listed below, as applicable. For improvements planned independently of local, State, or Federal agencies, indicate planned or actual completion dates, as applicable. Indicate dates as accurately as possible.

Implementation Stage	Schedule MM / DD / YYYY	Actual Completion MM / DD / YYYY
– Begin construction	___/___/_____	___/___/_____
– End construction	___/___/_____	___/___/_____
– Begin discharge	___/___/_____	___/___/_____
– Attain operational level	___/___/_____	___/___/_____

e. Have appropriate permits/clearances concerning other Federal/State requirements been obtained? ____Yes ____No

Describe briefly: _____

_____

B.6. EFFLUENT TESTING DATA (GREATER THAN O.1 MGD ONLY).

Applicants that discharge to waters of the US must provide effluent testing data for the following parameters. Provide the indicated effluent testing required by the permitting authority for each outfall through which effluent is discharged. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136. At a minimum, effluent testing data must be based on at least three pollutant scans and must be no more than four and one-half years old.

Outfall Number:_____

POLLUTANT	MAXIMUM DAILY DISCHARGE		AVERAGE DAILY DISCHARGE			ANALYTICAL METHOD	ML / MDL
	Conc.	Units	Conc.	Units	Number of Samples		
CONVENTIONAL AND NONCONVENTIONAL COMPOUNDS.							
AMMONIA (as N)							
CHLORINE (TOTAL RESIDUAL, TRC)							
DISSOLVED OXYGEN							
TOTAL KJELDAHL NITROGEN (TKN)							
NITRATE PLUS NITRITE NITROGEN							
OIL and GREASE							
PHOSPHORUS (Total)							
TOTAL DISSOLVED SOLIDS (TDS)							
OTHER							

END OF PART B.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

FACILITY NAME AND PERMIT NUMBER:
Shorts Creek Wastwater Treatment Plant

Form Approved 1/14/99
OMB Number 2040-0086

BASIC APPLICATION INFORMATION

PART C. CERTIFICATION

All applicants must complete the Certification Section. Refer to instructions to determine who is an officer for the purposes of this certification. All applicants must complete all applicable sections of Form 2A, as explained in the Application Overview. Indicate below which parts of Form 2A you have completed and are submitting. By signing this certification statement, applicants confirm that they have reviewed Form 2A and have completed all sections that apply to the facility for which this application is submitted.

Indicate which parts of Form 2A you have completed and are submitting:

✓ Basic Application Information packet

Supplemental Application Information packet:

_____ Part D (Expanded Effluent Testing Data)

_____ Part E (Toxicity Testing: Biomonitoring Data)

_____ Part F (Industrial User Discharges and RCRA/CERCLA Wastes)

_____ Part G (Combined Sewer Systems)

ALL APPLICANTS MUST COMPLETE THE FOLLOWING CERTIFICATION.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name and official title: R. Cellell Dalton, Wythe County Administrator

Signature: R Cellell Dalton

Telephone number: (276) 223-4500

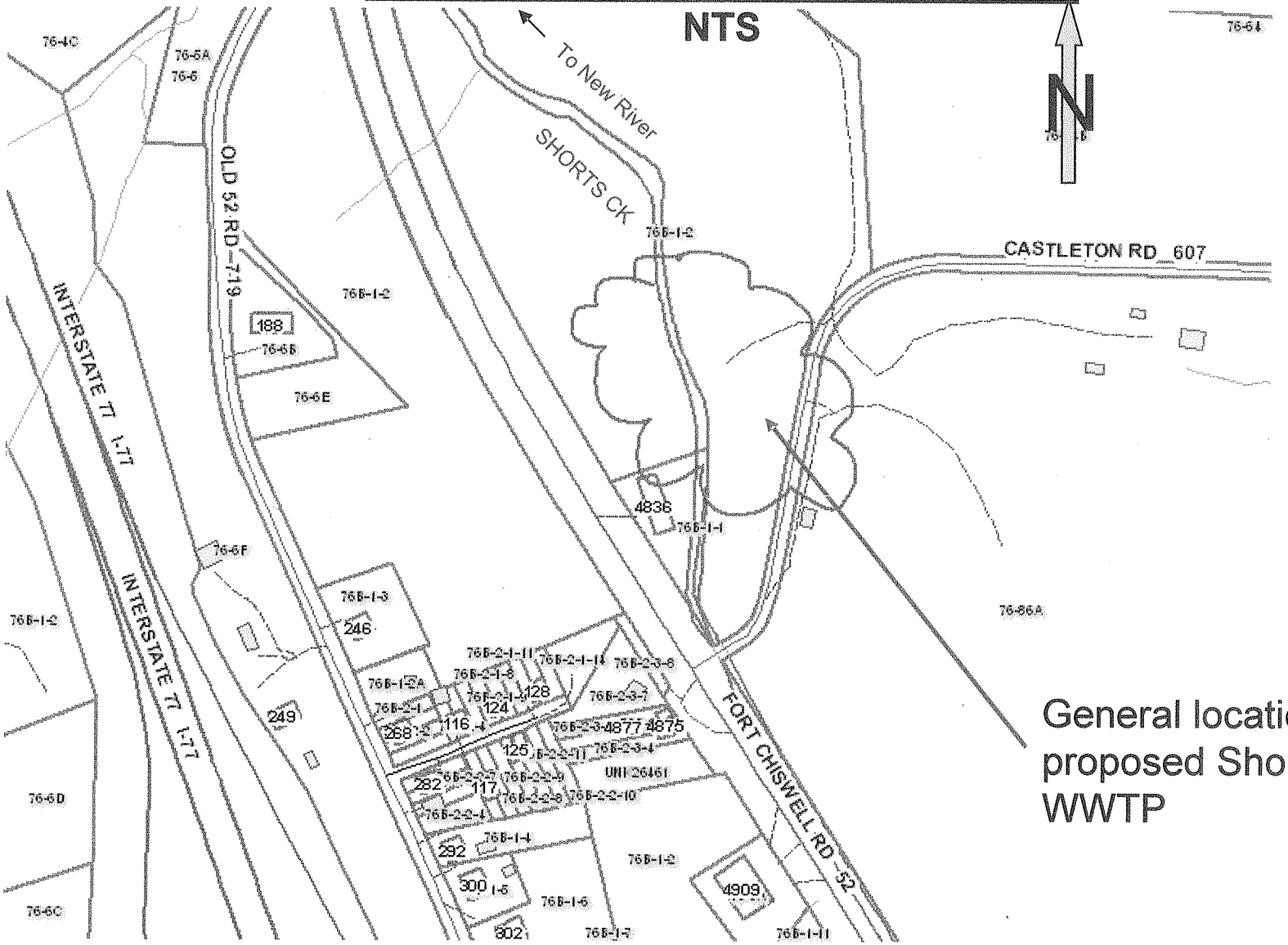
Date signed: 6/17/14

Upon request of the permitting authority, you must submit any other information necessary to assess wastewater treatment practices at the treatment works or identify appropriate permitting requirements.

SEND COMPLETED FORMS TO:

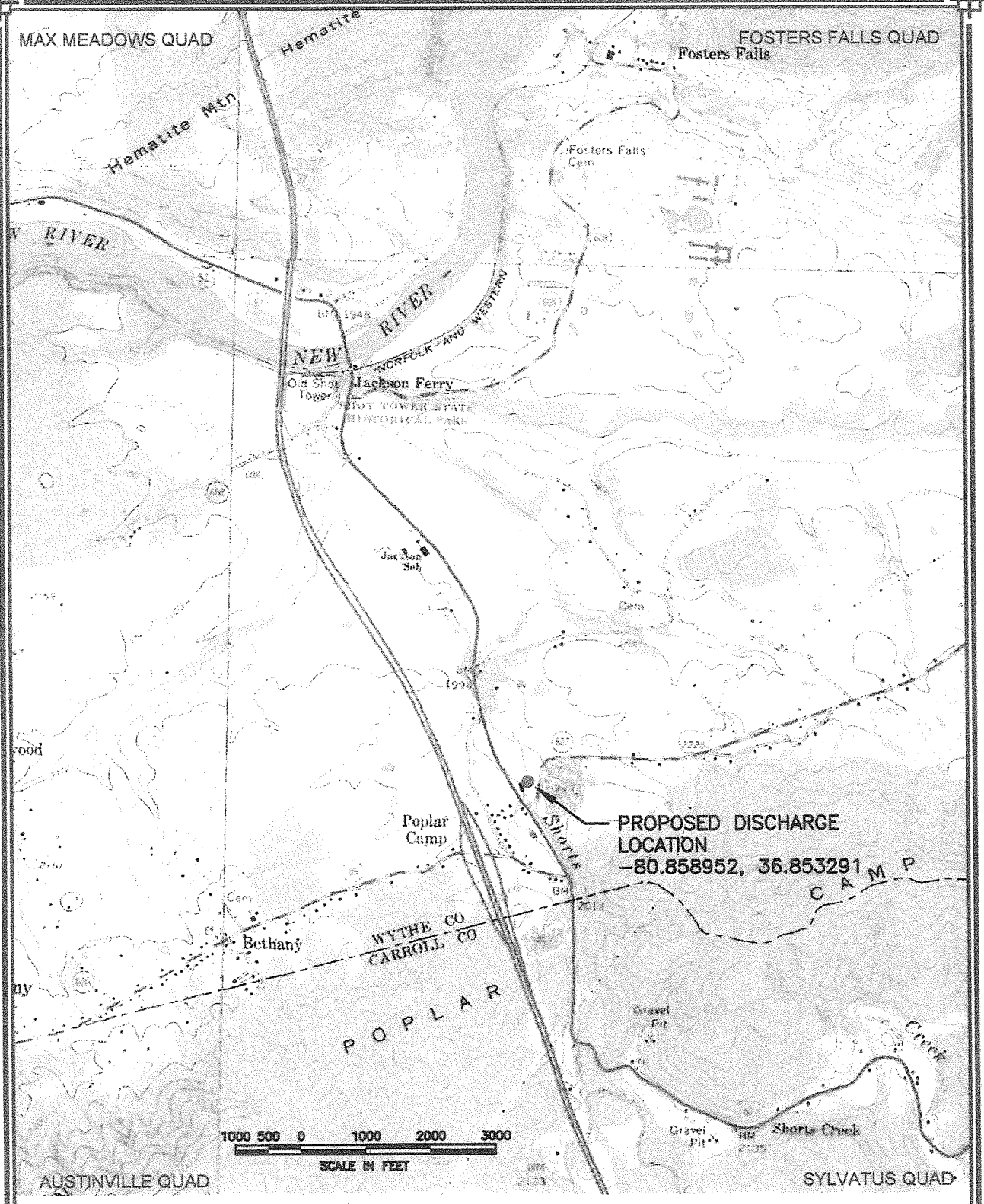
LOCATION MAP – PROPOSED WWTP

NTS



General location of proposed Shorts Ck WWTP

Exit 24



EXIT 24 WASTEWATER IMPROVEMENTS

PROPOSED WWTP DISCHARGE POINT

SEPTEMBER, 2012

Peed & Bortz, L.L.C.
CIVIL & ENVIRONMENTAL ENGINEERS

FACILITY NAME: Shorts Creek WWTP VPDES PERMIT NUMBER: TBD

VPDES SEWAGE SLUDGE PERMIT APPLICATION FORM

SCREENING INFORMATION

This application is divided into sections. Sections A pertain to all applicants. The applicability of Sections B, C and D depend on your facility's sewage sludge use or disposal practices. The information provided on this page will help you determine which sections to fill out.

1. All applicants must complete Section A (General Information).

2. Will this facility generate sewage sludge? X Yes _ No

   Will this facility derive a material from sewage sludge? _ Yes X No

   If you answered Yes to either, complete Section B (Generation Of Sewage Sludge Or Preparation Of A Material Derived From Sewage Sludge).

3. Will this facility apply sewage sludge to the land? _ Yes X No

   Will sewage sludge from this facility be applied to the land? X Yes _ No

   If you answered No to both questions above, skip Section C.

   If you answered Yes to either, answer the following three questions:

   a. Will the sewage sludge from this facility meet the ceiling concentrations, pollutant concentrations, Class A pathogen reduction requirements and one of the vector attraction reduction requirements 1-8, as identified in the instructions?
   _ Yes X No

   b. Will sewage sludge from this facility be placed in a bag or other container for sale or give-away for application to the land? _ Yes X No

   c. Will sewage sludge from this facility be sent to another facility for treatment or blending? X Yes _ No

   If you answered No to all three, complete Section C (Land Application Of Bulk Sewage Sludge).

   If you answered Yes to a, b or c, skip Section C.

4. Do you own or operate a surface disposal site? _ Yes X No

   If Yes, complete Section D (Surface Disposal).

FACILITY NAME: Shorts Creek WWTP VPDES PERMIT NUMBER: TBD

SECTION A. GENERAL INFORMATION

All applicants must complete this section.

1. Facility Information.
   a. Facility name: Shorts Creek WWTP
   b. Contact person: Don Crisp
      Title: Director
      Phone: ( ) 276-223-6020
   c. Mailing address:
      Street or P.O. Box: c/o Ft Chiswell WWTP, 631 Locust Hill Rd
      City or Town: Max Meadows State: VA Zip: 24360
   d. Facility location:
      Street or Route #: 911 address to be assigned - site near intersection of US Route 52 and Castleton Rd (SR607)
      County: Wythe
      City or Town: Austinville State: VA Zip: 24312
   e. Is this facility a Class I sludge management facility? __Yes X No
   f. Facility design flow rate: 0.04 mgd
   g. Total population served: 1000
   h. Indicate the type of facility:
      X Publicly owned treatment works (POTW)
      __ Privately owned treatment works
      __ Federally owned treatment works
      __ Blending or treatment operation
      __ Surface disposal site
      __ Other (describe):

2. Applicant Information. If the applicant is different from the above, provide the following:
   a. Applicant name: N/A
   b. Mailing address:
      Street or P.O. Box:
      City or Town: _____ State: _____ Zip:
   c. Contact person:
      Title:
      Phone: ( )
   d. Is the applicant the owner or operator (or both) of this facility?
      _____owner _____ operator
   e. Should correspondence regarding this permit be directed to the facility or the applicant? (Check one)
      _____ facility _____ applicant

3. Permit Information.
   a. Facility's VPDES permit number (if applicable): TBD
   b. List on this form or an attachment, all other federal, state or local permits or construction approvals received or applied for that regulate this facility's sewage sludge management practices:

Permit Number:	Type of Permit:
N/A	N/A

4. Indian Country. Does any generation, treatment, storage, application to land or disposal of sewage sludge from this facility occur in Indian Country? __Yes __No If yes, describe:

5. Topographic Map. Provide a topographic map or maps (or other appropriate maps if a topographic map is unavailable) that shows the following information. Maps should include the area one mile beyond all property boundaries of the facility:
   a. Location of all sewage sludge management facilities, including locations where sewage sludge is generated, stored, treated, or disposed. (see attached)
   b. Location of all wells, springs, and other surface water bodies listed in public records or otherwise known to the applicant within 1/4 mile of the property boundaries. (See attached)

6. Line Drawing. Provide a line drawing and/or a narrative description that identifies all sewage sludge processes that will be employed during the term of the permit including all processes used for collecting, dewatering, storing, or treating sewage sludge, the destination(s) of all liquids and solids leaving each unit, and all methods used for pathogen reduction and vector attraction reduction. Anticipated use of a package plant. Drwgs will be provided subsequent to design selection.

7. Contractor Information. Are any operational or maintenance aspects of this facility related to sewage sludge generation, treatment, use or disposal the responsibility of a contractor? __Yes X No
   If yes, provide the following for each contractor (attach additional pages if necessary).
   Name:
   Mailing address:
   Street or P.O. Box:
   City or Town: _____ State: _____ Zip:
   Phone: ( )
   Contractor's Federal, State or Local Permit Number(s) applicable to this facility's sewage sludge:

   If the contractor is responsible for the use and/or disposal of the sewage sludge, provide a description of the service to be provided to the applicant and the respective obligations of the applicant and the contractor(s).

8. Pollutant Concentrations. Using the table below or a separate attachment, provide sewage sludge monitoring data for the pollutants which limits in sewage sludge have been established in 9 VAC 25-31-10 et seq. for this facility's expected use or disposal practices. All data must be based on three or more samples taken at least one month apart and must be no more than four and one-half years old.

POLLUTANT	CONCENTRATION (mg/kg dry weight)	SAMPLE DATE	ANALYTICAL METHOD	DETECTION LEVEL FOR ANALYSIS
Arsenic				
Cadmium				
Chromium				
Copper				
Lead				
Mercury				
Molybdenum				
Nickel				
Selenium				
Zinc				

9. Certification. Read and submit the following certification statement with this application. Refer to the instructions to determine who is an officer for purposes of this certification. Indicate which parts of the application you have completed and are submitting:

   X Section A (General Information)
   ____Section B (Generation of Sewage Sludge or Preparation of a Material Derived from Sewage Sludge)
   ____Section C (Land Application of Bulk Sewage Sludge)
   ____Section D (Surface Disposal)

FACILITY NAME: Shorts Creek WWTP VPDES PERMIT NUMBER: TBD

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name and official title R. Cellell Dalton, County Administrator

Signature R Cellell Dalton Date Signed 8/12/14

Telephone number (276) 223-4500

Upon request of the department, you must submit any other information necessary to assess sewage sludge use or disposal practices at your facility or identify appropriate permitting requirements.

FACILITY NAME: Shorts Creek WWTP VPDES PERMIT NUMBER: TBD

SECTION B. GENERATION OF SEWAGE SLUDGE OR PREPARATION OF A MATERIAL DERIVED FROM SEWAGE SLUDGE

Complete this section if your facility generates sewage sludge or derives a material from sewage sludge

1. Amount Generated On Site.
   Total dry metric tons per 365-day period generated at your facility:____ dry metric tons To be determined

2. Amount Received from Off Site. If your facility receives sewage sludge from another facility for treatment, use or disposal, provide the following information for each facility from which sewage sludge is received. If you receive sewage sludge from more than one facility, attach additional pages as necessary.
   a. Facility name:
   b. Contact Person: N/A
      Title:
      Phone ( )
   c. Mailing address:
      Street or P.O. Box:
      City or Town:_____ State:_____ Zip:
   d. Facility Address:
      (not P.O. Box)
   e. Total dry metric tons per 365-day period received from this facility:_____ dry metric tons
   f. Describe, on this form or on another sheet of paper, any treatment processes known to occur at the off-site facility, including blending activities and treatment to reduce pathogens or vector attraction characteristics:

3. Treatment Provided at Your Facility.
   a. Which class of pathogen reduction is achieved for the sewage sludge at your facility?
      __Class A __Class B X Neither or unknown
   b. Describe, on this form or another sheet of paper, any treatment processes used at your facility to reduce pathogens in sewage sludge:
   c. Which vector attraction reduction option is met for the sewage sludge at your facility?
      __ Option 1 (Minimum 38 percent reduction in volatile solids)
      __ Option 2 (Anaerobic process, with bench-scale demonstration)
      __ Option 3 (Aerobic process, with bench-scale demonstration)
      __ Option 4 (Specific oxygen uptake rate for aerobically digested sludge)
      __ Option 5 (Aerobic processes plus raised temperature)
      __ Option 6 (Raise pH to 12 and retain at 11.5)
      __ Option 7 (75 percent solids with no unstabilized solids)
      __ Option 8 (90 percent solids with unstabilized solids)
      X None or unknown
   d. Describe, on this form or another sheet of paper, any treatment processes used at your facility to reduce vector attraction properties of sewage sludge: Will be determined during design process.
   e. Describe, on this form or another sheet of paper, any other sewage sludge treatment activities, including blending, not identified in a - d above:

4. Preparation of Sewage Sludge Meeting Ceiling and Pollutant Concentrations, Class A Pathogen Requirements and One of Vector Attraction Reduction Options 1-8 (EQ Sludge). N/A
   (If sewage sludge from your facility does not meet all of these criteria, skip Question 4.)
   a. Total dry metric tons per 365-day period of sewage sludge subject to this section that is applied to the land:
      _____ dry metric tons
   b. Is sewage sludge subject to this section placed in bags or other containers for sale or give-away?
      __Yes __No

5. Sale or Give-Away in a Bag or Other Container for Application to the Land. N/A
   (Complete this question if you place sewage sludge in a bag or other container for sale or give-away prior to land application. Skip this question if sewage sludge is covered in Question 4.)
   a. Total dry metric tons per 365-day period of sewage sludge placed in a bag or other container at your facility

for sale or give-away for application to the land: 0 dry metric tons

b. Attach, with this application, a copy of all labels or notices that accompany the sewage sludge being sold or given away in a bag or other container for application to the land.

6. Shipment Off Site for Treatment or Blending. (Dried sludge hauled to application site.)

(Complete this question if sewage sludge from your facility is sent to another facility that provides treatment or blending. This question does not apply to sewage sludge sent directly to a land application or surface disposal site. Skip this question if the sewage sludge is covered in Questions 4 or 5. If you send sewage sludge to more than one facility, attach additional sheets as necessary.)

a. Receiving facility name: Ft Chiswell Sewage Treatment Plant

b. Facility contact: Don Crisp
Title: Director
Phone: ( ) 276-223-6020

c. Mailing address:
Street or P.O. Box: 631 Loust Hill Rd
City or Town: Max Meadows State: VA Zip: 24360

d. Total dry metric tons per 365-day period of sewage sludge provided to receiving facility: TBD dry metric tons

e. List, on this form or an attachment, the receiving facility's VPDES permit number as well as the numbers of all other federal, state or local permits that regulate the receiving facility's sewage sludge use or disposal practices:

Permit Number:	Type of Permit:
VA 0074161	VPDES

f. Does the receiving facility provide additional treatment to reduce pathogens in sewage sludge from your facility? __Yes X No
Which class of pathogen reduction is achieved for the sewage sludge at the receiving facility?
__Class A X Class B __Neither or unknown
Describe, on this form or another sheet of paper, any treatment processes used at the receiving facility to reduce pathogens in sewage sludge:

g. Does the receiving facility provide additional treatment to reduce vector attraction characteristics of the sewage sludge? __Yes X No
Which vector attraction reduction option is met for the sewage sludge at the receiving facility?
__ Option 1 (Minimum 38 percent reduction in volatile solids)
__ Option 2 (Anaerobic process, with bench-scale demonstration)
__ Option 3 (Aerobic process, with bench-scale demonstration)
__ Option 4 (Specific oxygen uptake rate for aerobically digested sludge)
__ Option 5 (Aerobic processes plus raised temperature)
__ Option 6 (Raise pH to 12 and retain at 11.5)
__ Option 7 (75 percent solids with no unstabilized solids)
__ Option 8 (90 percent solids with unstabilized solids)
__ None unknown
Describe, on this form or another sheet of paper, any treatment processes used at the receiving facility to reduce vector attraction properties of sewage sludge:

h. Does the receiving facility provide any additional treatment or blending not identified in f or g above?
__Yes X No
If yes, describe, on this form or another sheet of paper, the treatment processes not identified in f or g above:

i. If you answered yes to f., g or h above, attach a copy of any information you provide to the receiving facility to comply with the "notice and necessary information" requirement of 9 VAC 25-31-530.G.

j Does the receiving facility place sewage sludge from your facility in a bag or other container for sale or give-away for application to the land? __Yes X No
If yes, provide a copy of all labels or notices that accompany the product being sold or given away.

k. Will the sewage sludge be transported to the receiving facility in a truck-mounted watertight tank normally used for such purposes? ___ Yes X No. If no, provide description and specification on the vehicle used to transport the sewage sludge to the receiving facility. Ford dump truck
Show the haul route(s) on a location map or briefly describe the haul route below and indicate the days of the
Route 607 to US 52, north to US 11, east to Loust Hill Road, north to Sewer plant entrance. Hauled once per year.

week and the times of the day sewage sludge will be transported.

7. Land Application of Bulk Sewage Sludge. N/A

(Complete Question 7.a if sewage sludge from your facility is applied to the land, unless the sewage sludge is covered in Questions 4, 5 or 6; complete Question 7.b, c & d only if you are responsible for land application of sewage sludge.)

a. Total dry metric tons per 365-day period of sewage sludge applied to all land application sites:_____dry metric tons

b. Do you identify all land application sites in Section C of this application? __Yes __No
If no, submit a copy of the Land Application Plan (LAP) with this application (LAP should be prepared in accordance with the instructions).

c. Are any land application sites located in States other than Virginia? __Yes __No
If yes, describe, on this form or on another sheet of paper, how you notify the permitting authority for the States where the land application sites are located. Provide a copy of the notification.

d. Attach a copy of any information you provide to the owner or lease holder of the land application sites to comply with the "notice and necessary" information requirement of 9 VAC 25-31-530 F and/or H (Examples may be obtained in Appendix IV).

8. Surface Disposal. N/A

(Complete Question 8 if sewage sludge from your facility is placed on a surface disposal site.)

a. Total dry metric tons per 365-day period of sewage sludge from your facility placed on all surface disposal sites: _____ dry metric tons

b. Do you own or operate all surface disposal sites to which you send sewage sludge for disposal?
__Yes __No
If no, answer questions c - g for each surface disposal site that you do not own or operate. If you send sewage sludge to more than one surface disposal site, attach additional pages as necessary.

c. Site name or number:

d. Contact person:
Title:
Phone: ( )
Contact is: __Site Owner __Site operator

e. Mailing address.
Street or P.O. Box:
City or Town:_____ State:_____ Zip:

f. Total dry metric tons per 365-day period of sewage sludge from your facility placed on this surface disposal site: _____ dry metric tons

g. List, on this form or an attachment, the surface disposal site VPDES permit number as well as the numbers of all other federal, state or local permits that regulate the sewage sludge use or disposal practices at the surface disposal site:

Permit Number:	Type of Permit:
_____	
_____	

9. Incineration.

(Complete Question 9 if sewage sludge from your facility is fired in a sewage sludge incinerator.)

a. Total dry metric tons per 365-day period of sewage sludge from your facility fired in a sewage sludge incinerator: _____ dry metric tons

b. Do you own or operate all sewage sludge incinerators in which sewage sludge from your facility is fired?
___Yes ___No
If no, answer questions c - g for each sewage sludge incinerator that you do not own or operate. If you send sewage sludge to more than one sewage sludge incinerator, attach additional pages as necessary.

c. Incinerator name or number:

d. Contact person:
Title:
Phone: ( )
Contact is: __Incinerator Owner __Incinerator Operator

e. Mailing address.
Street or P.O. Box:

City or Town:_____ State:_____ Zip:

f. Total dry metric tons per 365-day period of sewage sludge from your facility fired in this sewage sludge incinerator: _____ dry metric tons

g. List on this form or an attachment the numbers of all other federal, state or local permits that regulate the firing of sewage sludge at this incinerator:

Permit Number: Type of Permit:

_____

_____

10. Disposal in a Municipal Solid Waste Landfill. N/A

(Complete Question 10 if sewage sludge from your facility is placed on a municipal solid waste landfill. Provide the following information for each municipal solid waste landfill on which sewage sludge from your facility is placed. If sewage sludge is placed on more than one municipal solid waste landfill, attach additional pages as necessary.)

a. Landfill name:

b. Contact person:
Title:
Phone: ( )
Contact is: __Landfill Owner __Landfill Operator

c. Mailing address.
Street or P.O. Box:
City or Town:_____ State:_____ Zip:

d. Landfill location.
Street or Route #:
County:
City or Town: _____ State:_____ Zip:

e. Total dry metric tons per 365-day period of sewage sludge placed in this municipal solid waste landfill:
_____ dry metric tons

f. List, on this form or an attachment, the numbers of all federal, state or local permits that regulate the operation of this municipal solid waste landfill:

Permit Number: Type of Permit:

_____

_____

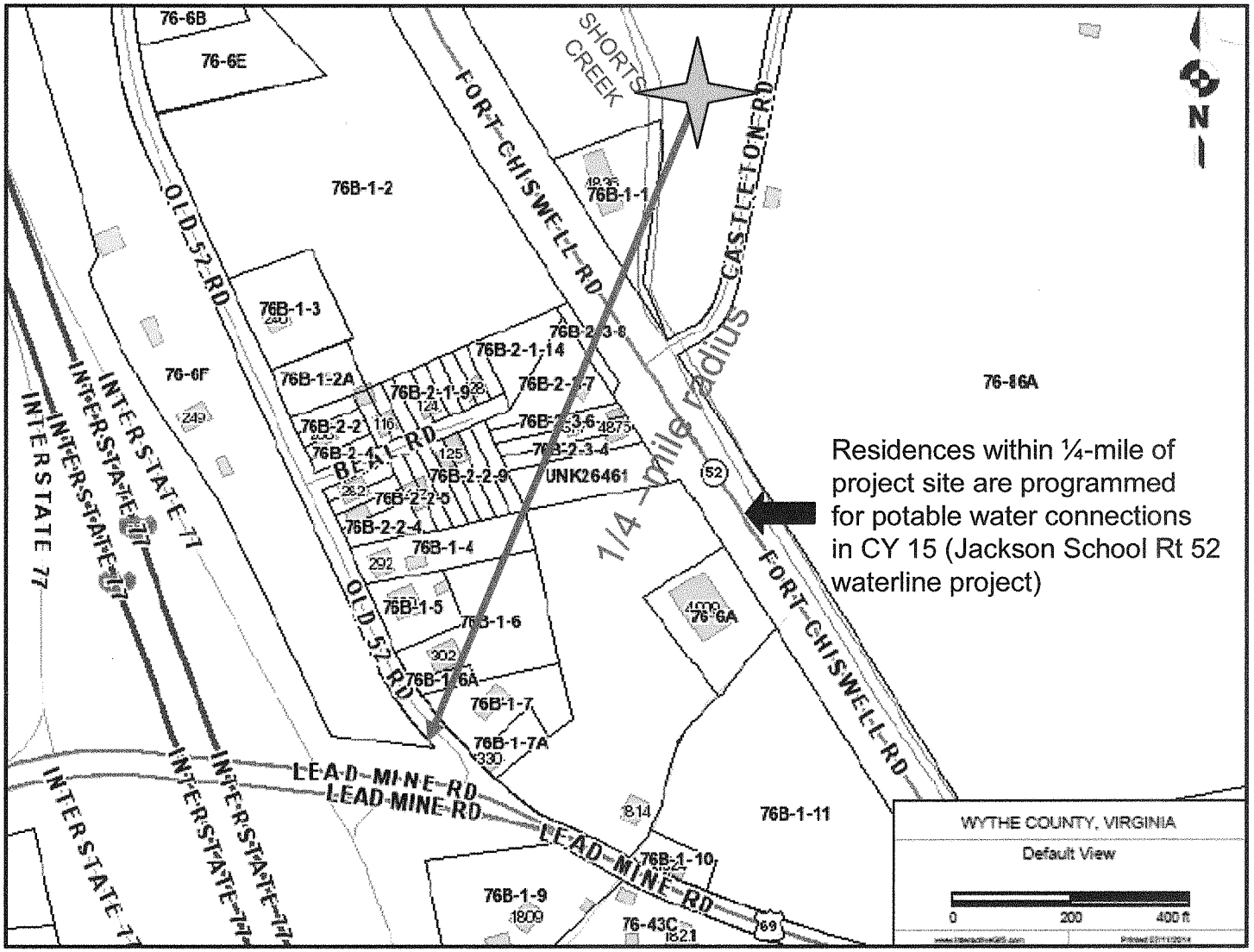
g. Does sewage sludge meet applicable requirements in the Virginia Solid Waste Management Regulation, 9 VAC 20-80-10 et seq., concerning the quality of materials disposed in a municipal solid waste landfill?
__Yes __No

h. Does the municipal solid waste landfill comply with all applicable criteria set forth in the Virginia Solid Waste Management Regulation, 9 VAC 20-80-10 et seq.? __Yes __No

i. Will the vehicle bed or other container used to transport sewage sludge to the municipal solid waste landfill be watertight and covered? ___ Yes ___ No
Show the haul route(s) on a location map or briefly describe the route below and indicate the days of the week and time of the day sewage sludge will be transported.

SHORTS CREEK WWTP

Sludge Permit Application Permit: Item 5a



ORDINANCE NUMBER 93-3

WYTHE COUNTY
WASTEWATER RULES AND REGULATIONS

DRAFTS

February 4, 1993

February 9, 1993

March 9, 1993

April 9, 1993

APPROVED

May 11, 1993

Prepared by

Water and Sewer Committee

Supervisors Alan A. Dunford and Olin F. Armentrout

Prepared with assistance from

Anderson & Associates, Inc.
Consulting Engineers
Blacksburg, Virginia
JN 9414

SEWER RULES AND REGULATIONS
TABLE OF CONTENTS

REGULATION I - GENERAL

I-A Title, Authority, and Jurisdiction

1. Title. This ordinance shall hereinafter be known and may be cited as the "Sewer Use Ordinance of Wythe County, Virginia," Ordinance number 93-3.

2. Authority. It is adopted pursuant to the authority of Chapter 15.1-292.2 of the Code of Virginia of 1950, and amendments thereto.

3. Jurisdiction. The provisions of this ordinance shall apply to all land within Wythe County, Virginia, which is not within the jurisdiction of the incorporated municipalities.

I-B Purpose

This ordinance is adopted for the purpose of promoting the health, safety, and welfare of the people of Wythe County and for the safe-guarding of water resources common to all through the use of public sewage facilities.

I-C Rules

In the construction of this ordinance, the rules contained in this section shall be observed and applied, except when the context clearly indicates otherwise.

I-D Definitions

Unless the context specifically indicates otherwise, the meaning of terms used in these regulations shall be as follows:

1. "Administrator" shall mean the duly appointed agent of the Wythe County Board of Supervisors or the Administrator's authorized deputy, agent, or representative who is appointed to administer the ordinance.

2. "Biochemical oxygen demand" (BOD) shall mean the quantity of oxygen utilized in the biochemical oxidation of organic matter in five (5) days at 20°C, expressed in milligrams per liter, when tested in accordance with Standard Methods.

3. "Building drain" shall mean that part of the lowest horizontal piping of a drainage system which receives the discharge from waste and other drainage pipes inside

the walls of the building and conveys it to the building sewer, beginning five (5) feet (1.5 meters) outside the inner face of the building wall.

4."Building sewer" shall mean the extension from the building drain to the public sewer or other place of disposal, also called house connection.

5."Combined sewer" shall mean sewer intended to receive both wastewater and storm or surface water.

6."Commercial user" shall mean any business or non-residential user which discharges wastes to the sanitary sewer.

7."Commercial wastes" shall mean the wastewater discharge to the sanitary sewer from a commercial user which may include both domestic wastewater and pretreated process wastewater.

8."County" shall mean County of Wythe, Virginia.

9."Customer" shall mean the party who has applied for continuing sewer service and will be responsible for paying periodic bills. A structure with more than one living unit or business unit such as apartments, mobile homes, separate offices or businesses in one building, etc. will be considered as having separate customers for each unit and will be required to pay the minimum water/sewer rate for each unit.

a."Owner-Customer" shall mean the customer who owns the premises to which sewer service is provided.

b."Tenant-Customer" shall mean the customer who rents the premises to which sewer service is provided.

10."Developer" shall mean person or persons developing or planning to develop any parcel of land by the placement therein or any improvements which would normally require wastewater or a sewage disposal system.

11."Domestic Wastewater", sometimes referred to as sanitary wastewater, shall mean the wastewater generated from normal human activity such as wastewater from residences or from facilities used by employees of a commercial, industrial, or institutional users. Domestic wastewater may originate from such sources as bathrooms, sinks and drains and is distinguished from process wastewater and normally contains less than 240 milligrams per liter of BOD_5 and suspended solids.

12."Easement" shall mean an acquired legal right for the specific use of land owned by others.

13."Equivalent Dwelling Unit" - Shall mean the conversion of commercial wastewater usage to residential usage. Residential usage is 135 gallons per day.

14."Engineer" shall be any engineer hired by the County to provide professional engineering service or review.

15."Floatable oil" is oil, fat, or grease in a physical state such that it will separate by gravity from wastewater by treatment in an approved pretreatment system and the wastewater does not interfere with the collection system.

16."Garbage" shall mean the animal and vegetable waste resulting from the handling, preparation, cooking, and serving of foods.

17."Industrial user" shall mean a user which employs any industrial, manufacturing or processing operation which discharges wastewater to the sanitary sewer.

18."Industrial wastewater" shall mean the wastewater from industrial users including both domestic wastewater and pretreated process wastewater.

19."May" is permissive (see "shall", Sec. 31)

20."Natural outlet" shall mean any outlet, including storm sewers and combined sewer overflows, into a watercourse, pond, ditch, lake, or other body of surface or groundwater.

21."Person" shall mean any individual, firm company, association, society, corporation, or group.

22."Pretreatment" shall mean the treatment of process wastewater, prior to discharge to the public sewer, to a level acceptable to the County. Pretreatment is the reduction of specific wastewater constituents by physical, chemical, biological or any combination of methods. Pretreatment also includes any means used to reduce wastewater slugs to a level acceptable to the County.

23."Pretreated Wastewater" shall mean the treated process wastewater discharged from a customers privately owned and operated wastewater treatment works to the public sewer.

24."pH" shall mean the logarithm of the reciprocal of the hydrogen-ion concentration. The concentration is the weight of hydrogen-ions, in grams, per liter of solution. Neutral water, for example, has a pH value of 7 and a hydrogen-ion concentration of 10^{-7}.

25."Process Wastewater" shall mean the wastewater generated from commercial or industrial activities conducted by a customer. Process wastewater shall include the pretreated discharge of wastewater differing in character from domestic wastewater which may originate from manufacturing, processing, or cleaning operations, blowdown from heating or cooling operations, or other non-residential activities.

26."Properly shredded garbage" shall mean the wastes from the preparation, cooking and dispensing of food that have been shredded to such a degree that all particles will be carried freely under the flow conditions normally prevailing in public sewers, with no particle greater than 1/2 inch (1.27 centimeters) in any dimension.

27."Public sewer" shall mean a common sewer controlled by a governmental agency or public utility.

28."Sanitary sewer" shall mean a sewer that carries liquid and water-carried wastes from residences, commercial buildings, industrial plants, and institutions together with minor quantities of ground, storm and surface waters that are not admitted intentionally.

29."Sewage" is the spent water of a community. The preferred term is "wastewater" (Sec. 39)

30."Sewer" shall mean a pipe or conduit used to convey wastewater or drainage water.

31."Sewer connection" is a lateral from the sewer main to the property line.

32."Shall" is mandatory (See "may" Sec. 18).

33."Slug" means any discharge of water or wastewater which: in concentration of any given constituent, or in quantity of flow for any period or duration longer than fifteen (15) minutes exceeds five (5) times the average twenty-four (24) hour concentration or flow during normal operation; and shall adversely affect the collection system and/or performance of the wastewater treatment works.

34."Standard Methods" shall mean the methods contained in the most recent edition of the "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association and others.

35."Storm drain" (sometimes termed "storm sewer") shall mean a drain or sewer for conveying water, groundwater, subsurface water, or unpolluted water from any source.

36."Subdivision" shall mean the division of a parcel of land into two or more lots or parcels. For the purpose of transfer of ownership or building development, or if a new street is included. Any division of a parcel of land, or an authorized change in property lines at a recorded subdivision.

37."Surcharge" shall mean the charge in addition to the published water and sewer rates. The basis for surcharges on industrial waste in an operating cost for treating suspended solids and BOD_5, exceeding normal domestic sewage.

38."Suspended Solids" shall mean total suspended matter that either floats on the surface of, or is in suspension in water, wastewater, or other liquids, and that is removable by laboratory filtering as prescribed in "Standard Methods" and referred to as nonfilterable residue.

39."Unpolluted water" is water of quality equal to or better than the effluent criteria in effect for the wastewater treatment plant, or water that would not cause violation of federal and state water quality standards for the receiving water and would not be benefitted by discharge to the sanitary sewers and water treatment facilities provided.

40."User" shall mean any person who uses, connects to or otherwise discharges effluent by any means either directly or indirectly into the wastewater treatment facility.

41."Wastewater" shall mean the spent water of a community. From the standpoint of source, it may be a combination of the liquid and water carried wastes from residences, commercial buildings, industrial plants, and institutions, together with any ground water, surface water, and storm water that may be present.

42."Wastewater facilities" shall mean the structures, equipment and processes required to collect, transport, and treat and dispose of the treated effluent.

43."Wastewater treatment works" shall mean an arrangement of devices and structures for treating wastewater, and sludge. Sometimes used as synonymous with "waste treatment plant", "wastewater treatment plant" or "water pollution control plant".

44."Watercourse" shall mean a natural or artificial channel for the passage of water either continuously or intermittently.

I-E Policy

Wythe Sewer Use Ordinance

1.Application for Sewer Service

The owners of all commercial buildings, industrial plants, institutional establishments, structures and properties used for human occupancy, business, employment, recreation, and industrial or other purposes presently existing or constructed subsequent to the approval of this ordinance and located within or abutting on any street, alley, public right-of-way, or easement in which there is a public sewer line at a distance not greater than 300 feet shall connect to the sewer. Connection shall be at the owner's expense, in accordance with this and the Virginia Statewide Building Code.

a.The Administrator shall be allowed to grant exceptions to this requirement where it is not physically feasible to make the connection.

b.Newly constructed buildings shall be connected to the public sewer at the time of construction.

c.Existing buildings along newly completed and approved public sewer lines shall be connected within ninety (90) days.

d.The developer of any commercial, industrial site, or new subdivision platted for five (5) or more lots and/or five (5) or more dwelling units located within a thousand (1,000) feet of a public sewerage system shall be required to extend public sewer to the site at his own expense. The developer shall provide the Administrator with plans and specifications which have been approved by the appropriate state and local agencies. Upon completion of construction the developer shall

provide the Administrator copies of all required tests and certification from the appropriate state agencies and a professional engineer that the work was performed in accordance with the approved plans and specifications.

e. Any person owning property along the line of any sewer main, requiring sewer service into his premises, shall make written application to the Administrator. Such application shall set forth the name of the applicant, the location and the description of the property into which the sewer service are to be introduced, and the name of the plumber who is to do the work incidental to the introduction of the sewer service into the premises.

f. Pretreatment of process wastewater may be required. If the Administrator suspects that pretreatment may be required, the County may require additional information of the applicant to accompany the application for service. Such additional information may include but not be limited to the items included in Section II-C.6.

g. All prevailing connection charges, availability fees, and deposits shall accompany the application for sewer service.

h. The Administrator may upon request by residential customers allow arrangements for the connection fee to be paid in equal payments over an 18 month period with no interest.

2. Process Wastewater Service Agreements

When an industrial or commercial user applies to discharge process wastewater the County may agree to accept the discharge and enter into a Process Wastewater Service Agreement with the user. The Agreement shall outline the conditions under which the user will be allowed to discharge to the County's public sewer. The Agreement shall contain the following items plus any additional conditions which may be pertinent to the user and/or the discharge.

a. Maximum daily discharge volume and maximum instantaneous discharge rate

b. Maximum allowable concentrations of specific wastewater constituents

c.Pretreatment requirements, including inspection and sampling facilities

d.Monitoring requirements, including pollutants to be monitored, sampling location, frequency and sample types

e.Special charges or fees if applicable

f.Notification requirements for normal, emergency and accident reporting

g.Applicable penalties

h.Duration and nontransferability of agreement

3.Report on Completion of Connection and Inspection by Administrator

The person authorized to make the connection shall make a written request to the Administrator promptly on the completion of the work. The Administrator shall inspect such connection promptly. The connection shall not be covered up until approved by the Administrator or until there has been no inspection within twenty-four (24) hours after notice given to the Administrator.

4.Charges for Wastewater Service

Charges for wastewater service shall be in accordance with this section, Section III Sewer Service Charge, and Attachment A, the current rate schedule adopted by the County.

a.Sewer service charges for customers with both water and sewer service shall be based on metered water use.

b.Customers are responsible for furnishing the County with their correct addresses. Failure to receive bills will not be considered an excuse for nonpayment nor permit an extension of the date when the account will be considered delinquent.

c.If bills are to be sent to an address other than the premises served, the County shall be notified

in writing by the customer of any change of address.

d.If requested in writing by the owner-customer, the County will send bills to and receive payment from agents or tenant-customer of the owner-customer. The owner-customer shall not be relieved of liability for all charges, and the County will not be obligated to notify the owner-customer of the nonpayment of bills by such agent or tenant-customer.

e.Payments shall be made at the Office of the Administrator or at such other places as may be designated by the County.

f.The County reserves the right to correct any bills rendered in error.

g.Bills will be rendered monthly or as specified by the County.

5.Terms of Payment

a.Bills for service shall be due and payable by the 15th day of the month following the month in which the bill is rendered.

b.If a bill is not paid as required, a 10% charge will be added. If payment is not made within 60 days of its due date, public water and sewer service where existing public water service is provided will be discontinued, and all accounts must be paid. A 1-1/2% penalty will be added each month thereafter for each month of delinquency.

c.If service is disconnected for non-payment of sewer bill, there shall be a one hundred dollar ($100.00) reconnection fee.

6.Enforcement of Sewer Service Charges

a.The payment of sewer service charges may be enforced in the same manner and to the same extent and with the same rights as now exist or may hereafter be provided by law for the enforcement of claims or demands between individuals. Proceedings for the enforcement of sewer service charges shall be instituted and conducted in the name of the County.

b.There shall be a lien upon the real estate for the amount of any rates, fees, and other charges made by the County to the owner or lessee or tenant of such real estate as follows:

The County may upon the time of initiating service to a lessee or tenant of the landlord's property, notify the landlord that a lien will be placed upon his real estate if the lessee or tenant fails to pay any fees, rents or other charges when due for services rendered to the lessee or tenant. If the County perfects its lien on the landlord's property, the County shall have a statutory lien entered into the Judgement Lien Docket Book in the Clerk's Office of the Circuit Court of Wythe County, Virginia. This lien shall have the force and effect of a judgement and shall be superior to the interest of the owner or the tenant of the real estate.

c.All non-paid fees for service and penalties which have accumulated a delinquency equal to ninety days shall be turned over to the County's Attorney for collection.

d.All legal costs including fees for legal services arising out of the civil prosecution of any violation of any County rule or regulation shall be recoverable as costs to any such person, persons, or entity violating such rule or regulations.

I-F Amendment and Interpretation

The County reserves the right to revise and/or amend its Policies, Rules, and Regulations for sewer service, and to interpret the meaning of all statements made herein.

REGULATION II - WASTEWATER SYSTEM

II-A Purpose

It shall be the purpose of the County to obtain, improve, expand and maintain a wastewater collector system and wastewater treatment facility to serve the residences (both private and commercial) of the County of Wythe, Virginia insofar as this may be financially feasible. All systems shall comply with the Virginia State Water Control Board and Virginia Health

Department regulations and be designed to maintain and improve healthful living conditions.

II-B Connections to Sewer System

1.General

Connection to County sewer shall be made within ninety (90) days from the time notified that service is available. Connections made at any time after construction of lines passes an owners property will be subject to current connection fees set forth in this document, expenses of County relocating main lines, and cost of private plumbing contractor to make approved connections.

2.Prohibited Connections

No person(s) shall make connection of roof downspouts, foundation drains, areaway drains, or other sources of surface runoff or ground-water to a building sewer or building drain which, in turn, is connected directly or indirectly to a public sanitary sewer unless such connection is approved by the Administrator for purposes of disposal of polluted surface drainage. Existing connection of roof downspouts, foundation drains, areaway drains or other sources of surface runoff shall be disconnected from the public sanitary sewer within ninety (90) days from passage of this ordinance. Cost of such disconnection shall be borne by the property owner.

II-C Use of Public Sewers

1.Prohibited Water Discharges

No person(s) shall discharge or cause to be discharged any unpolluted waters such as stormwater, groundwater, roof runoff, subsurface drainage, or cooling water to any sewer except stormwater runoff from limited areas, which stormwater may be polluted at times, may be discharged to the sanitary sewer by permission of the Administrator.

2.Other Prohibited Substances

No person(s) shall discharge or cause to be discharged any of the following described waters or wastes to any public sewers:

a.Any gasoline, kerosene, benzene, napha, fuel oil, or other flammable or explosive liquid, solid, or gas in sufficient quantity or concentration to injure or interfere with any wastewater treatment process, constitute a hazard to humans or animals, create a public nuisance or create any hazard in the sanitary sewer system or receiving waters of the wastewater treatment plant.

b.Any waters containing toxic or poisonous solids, liquids, or bases in sufficient quantity, either singly or by interaction with other wastes, to injure or interfere with any waste treatment process, constitute a hazard to humans or animals, create a public nuisance, or create any hazard in the receiving waters of the wastewater treatment plant.

c.Any waters or wastes containing a pH lower than 4.0 or greater than 10.0 or having any other corrosive property capable of causing damage or hazard to structures, equipment, and personnel of the wastewater works.

d.Solid or viscous substances in quantities or of such size capable of causing obstruction to the flow in sewers, or other interference with the proper operation of the wastewater facilities such as, but not limited to, ashes, bones, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, unground garbage, whole blood, pounce, manure, hair and fleshings, entrails, and paper dishes, cups, milk containers, etc., either whole or ground by garbage grinders.

e.Hazardous or otherwise regulated wastes or wastewater exhibiting the characteristics of: ignitability, corrosivity, reactivity, toxicity, or specific listed wastes; as defined by the current regulations of the Virginia Department of Waste Management or as defined under the Federal Resource Conservation and Recovery Act (RCRA).

3.Restricted Discharges

The following described substances, materials, waters, or waste shall be limited in discharges to the public sewer to concentrations or quantities which will not harm either the sewers, wastewater treatment process or equipment; will not have an adverse effect on the receiving

stream; or will not otherwise endanger lives, limb, public property, or constitute a nuisance:

a. Wastewater having a temperature higher than 150° Fahrenheit (65° Celsius).

b. Wastewater containing more than 15 milligrams per liter of petroleum oil, non-biodegradable cutting oils or product of mineral oil origin.

c. Wastewater having a pH lower than 5.5 or greater than 9.0 standard units.

d. Wastewater from commercial users or industrial plants containing floating oils, fat, or grease.

e. Any garbage that has not been properly shredded. Garbage grinders may be connected to sanitary sewers from homes, hotels, institutions, restaurants, hospitals, catering establishments, or similar places where garbage originates from the preparation of food in kitchens for the purpose of consumption on the premises or when served by caterers.

f. Any waters or wastes containing objectionable or toxic substances to such degree that any such material received in the composite wastewater at the wastewater treatment works exceeds the limits established by the engineer for such materials as listed in Attachment B, except when permission to discharge such materials in higher concentrations has been granted by the Administrator and new limits have been established in an Process Wastewater Service Agreement.

g. Any waters or wastes containing odor-producing substances exceeding limits which may be established by the Administrator.

h. Any radioactive wastes or isotopes of such half life or concentration as may exceed limits established by the Administrator in compliance with applicable State and Federal regulations.

i. Quantities of flow, concentrations, or both which constitute a "slug" as defined herein.

j. Waters or wastes containing substances which are not amendable to treatment or reduction by the wastewater treatment processes employed, or are amendable to

treatment only to such degree that the wastewater treatment plant effluent cannot meet the requirements of other agencies having jurisdiction over discharge to the receiving waters.

k.Any water or wastes which, by interaction with other water or wastes in the public sewer system, release obnoxious gases, form suspended solids which interfere with the collection system, or create a condition deleterious to structures and treatment processes.

4.Maintenance

Grease, oil, and sand interceptors shall be provided and properly maintained when, in the opinion of the Administrator, they are necessary for the proper handling of liquid waters containing floatable grease in excessive amounts, as specified in Section 3 (c), or any flammable wastes, sand, or other harmful ingredients; except that such interceptors shall not be required for private living quarters or dwelling units.

5.Inspection Points

When required by the Board the owner of any property serviced by a building sewer conveying process wastewater shall install a suitable structure together with such necessary meters and other appurtenances in the building sewer to facilitate observation, sampling, and measurement of wastes. The structure shall be maintained by the owner so as to be safe and accessible at all times. Specific requirements may be detailed in an Process Wastewater Service Agreement.

6.Additional Information

The Administrator may require a user of sewer services to provide information needed to determine compliance with this ordinance. These requirements may include:

a.Wastewater discharge peak rate and volume over a specified time period.

b.Chemical analysis of wastewaters.

c.Information on raw materials, processes, and products affecting wastewater volume and quality or information on other materials that may be stored on the customers premises which might ultimately enter the sewer system due to an accident.

d.Quantity and disposition of specific liquid, sludge, oil, solvent, or other materials important to sewer use control.

e.A plat of sewers on the user's property showing sewer and pre-treatment facility location.

f.Details of wastewater pretreatment facilities.

g.Details of systems to prevent and control the losses of materials through spills to the municipal sewer.

7. Testing

All measurements, tests, and analysis of the characteristics of waters and wastes to which reference is made in this ordinance shall be determined in accordance with the latest edition of "Standard Methods for the Examination of Water and Wastewater", published by the American Public Health Association. Sampling methods, location, times, durations, and frequencies are to be determined on an individual basis subject to approval by the Administrator.

8.Special Considerations

No statement contained in these regulations shall be construed as preventing any special agreement or arrangement between the County and any industrial concern whereby an industrial waste of unusual strength or character may be accepted by the wastewater system for treatment.

II-D Powers and Authority of Inspectors

1.Authority

The Administrator has the full power and authority to carry out and enforce the provisions of these regulations.

2.Ownership

That portion of the sewer service line which is located within a street, alley or easement shall after construction be repaired and maintained by the County and shall become the property of the County. All connections with the sewage system shall be made under the supervision of the County and in accordance with the provisions in this ordinance.

3.Inspection

The Administrator and other duly authorized employees of the County bearing proper credentials and identification shall be permitted to enter all properties for the purposes of inspection, observation, measurement, sampling, and testing pertinent to discharge to the community system in accordance with the provisions of this ordinance.

4.Industrial Discharges

The Administrator or other duly authorized employees are authorized to obtain information concerning industrial processes which have a direct bearing on the kind and source of discharge to the wastewater collection system. The industry must establish that the revelation to the public of the information in question might result in an advantage to competitors.

REGULATION III - SEWER SERVICE CHARGE

III-A Service Charges

1.General

A service charge shall be levied on all users of the wastewater system. It shall be determined by multiplying the monthly water use for a customer by the rate established for the service area. The rate developed shall be based on both debt service and operation and maintenance. The rate shall be sufficient to provide for all costs and to accumulate a reserve for contingencies. The operation and maintenance cost per 1,000 gallons shall be uniform for the entire wastewater system (except for industrial surcharges), but the debt service portion of the rate may be calculated separately for customers in various service areas.

2.Basis of Normal Charges

Service charges shall normally be based on water use records. Where all water used is not returned to the sanitary sewer or where there is a discharge to the sewer with no corresponding water use, separate calculations or measurements shall be made to determine sewer use. Residential customers receiving sewer service but not water service shall be billed based on rates established in Attachment A.

3.Basis of Special Charges

When the County agrees to accept a special discharge, a special service charge may be levied on the user generating the discharge.

The County may also elect to levy a special service charge for pretreated process wastewater which may be accepted for discharge. Special service charges for process wastewater shall be specifically contained in the Process Wastewater Service Agreement between the County and the commercial or industrial user.

4.Changes in Charges

Sewer service charges shall be evaluated annually based on the sewer rate structure (Regulation III-C); notification shall be made to all customers and public hearings shall be held to allow for public comments on the rates set by the County, according to the Code of Virginia.

III-B Enforcement

1.Failure of Payment

Failure to pay monthly bills for sewer service, when due, or failure to pay the established sewer surcharge for industrial waste when due, or repeated discharge of prohibited waste to the sanitary sewer shall be sufficient cause to disconnect any and all services to the water and/or sewer mains of the County and the same penalties and charges now or hereafter provided for by the ordinances of the County, for failure to pay the bill for sewer service when due shall be applicable in like manner in cases of failure to pay the established surcharge for industrial waste discharged to the sanitary sewer mains as established herein.

2.Enforcement of Payment

The payment of sewer service charges may be enforced in the same manner and to the same extent and with the same rights as now exist or may hereafter be provided by law for the enforcement of claims or demands between individuals. Proceedings for the enforcement of sewer service charges shall be instituted and conducted in the name of the County.

Each owner of property shall be personally liable for the payment of the charges levied under this division, and the same

may constitute a lien upon the property served by the sewage system for the amount so assessed or charged thereon.

III-C Rates

1.A residential connection fee of $350 is due and payable within 90 days of the notice of service. Commercial connection fees shall be multiples of the residential fee based on the equivalent dwelling unit of water usage. Connection fees after the initial 90 day period shall be $500. The connection fee shall be at a rate established by the Board of Supervisors on an annual basis.

2.Basic Rates

Minimum charge per month shall be assessed based on a fixed volume in gallons. Industrial users are subject to a rate surcharge as set out in Regulation III-C, Section 2.

Rates shall be determined at the beginning of each fiscal year based on records for the previous year. Suitable adjustments shall be made to account for changes in use or cost anticipated.

Rates shall be calculated by the following formula:

Rate per 1,000 gallons of water used = (a+b+c+d+e+f+g) where each component represents the cost per 1,000 gallons to be spent for that item.

a =1,000 x (Annual Treatment Plant Debt Service) x (Debt Reserve Factor) divided by Average Annual Water Use.

b =1,000 x (Annual Collection System Debt Service) x (Debt Reserve Factor) divided by Average Annual Water Use

c =1,000 x (Annual Reserve Amount) divided by Average Annual Water Use

d =1,000 x (Annual Employee Salaries) divided by Average Annual Water Use

e =1,000 x (Annual Operation & Maintenance Supplies Cost) divided by Average Annual Water Use

f =1,000 x (Annual Administrative & Office Expenses) divided by Average Annual Water Use

g =1,000 x (Annual Depreciation) divided by Average Annual Water Use

The following components of these formulas are defined as:

1)Debt Reserve Factor: Factor to allow for a reserve as a percentage of the debt. This is done to insure that revenues collected will be adequate to make payments. The factor is reserve percentage expressed as a decimal fraction and added to 1. A 10% reserve will result in a factor of 1.1.

2)Capital Improvement Reserve: The amount of capital to be accumulated annually to be used as the local share of the cost of constructing and upgrading of facilities in the future (optional).

3)Operation and Maintenance Costs: All costs incurred in the repair or routine maintenance of the wastewater facilities and all costs incurred related to the operation of the wastewater facilities. These include power costs, tools, chemical costs, laboratory testing, as well as materials, supplies, and equipment used for maintenance.

4)Administrative Costs: All costs incurred in the administration of the wastewater facilities. This includes rent, office expenses, office utilities, and outside services such as attorney, accounts, etc.

2.High Strength Surcharge

All industrial and commercial users discharging wastewater into the sanitary sewer shall be subject to a high strength waste surcharge in addition to the sewer service charge. The wastewater shall contain none of the characteristics of waste prohibited previously with the exception of an average B.O.D. and suspended solids in excess of 240 milligrams per liter during the user's normal workday. The wastewater may be accepted for treatment if the following requirement is met and the Administrator is satisfied that the wastewater will not be detrimental to the treatment process.

The user discharging such waste enters into an Industrial Wastewater Service Agreement and agrees to pay the sewer service charge and industrial waste surcharge. The basis for surcharge on high strength wastes is a capital and operating cost per milligram per liter per thousand (1,000) gallons for the B.O.D. and a capital

operating cost per milligram per liter per thousand (1,000) gallons for the total suspended solids exceeding 240 milligrams per liter. The surcharge shall be calculated for billing purposes with the following formula:

Surcharge = W ((R1) (B.O.D. - 240) + (R2) (T.S.S. - 240))

W = Water used per month in 1,000 gallons

B.O.D. = 5 day, 20°C, B.O.D. of process waste in mg/l

T.S.S. = Total Suspended Solids of process waste in mg/l

R1 = Rate in dollars per milligram per liter per thousand gallons for BOD

R2 = Rate in dollars per milligram per liter per thousand gallons for TSS

It shall be evaluated annually and adjusted if necessary.

ATTACHMENT A

SEWER SERVICE RATES

Charges for Wastewater Services Sewer Service rates shall be calculated in accordance with County Regulations III.

1. Sewer Service Rates

a.Residential (based on metered water use):

$_____ minimum/_____ gal

$_____/1,000 gallons over _____ gallons

b.Commercial and Light Industrial (Discharging Non Process Wastewater) (based on metered water use):

$_____ minimum/_____ gallons

$_____/1,000 gallons over _____

c.Industrial and Commercial (Discharging Process Wastewater) (based on metered water use):

$_____ minimum/_____ gallons

$_____/1,000 gallons over _____

d.Surcharge for BOD 5 or Total Suspended Solids exceeding 240 mg/l (By Special Agreement Only)

$_____/1,000 gal/mg/l BOD 5 over 240

$_____/1,000 gal/mg/l Total Suspended Solids over 210

e.For Unmetered Customers with Sewer Only:

$_____ per residence or dwelling unit

2.Availability Fees:

a.Residential: $_____

b.Commercial: $_____

c.Industrial (Discharging Process Wastewater): $_____

ATTACHMENT B

CURRENT COMPOSITE WASTEWATER CONSTITUENT LIMITS (as measured in the composite influent wastewater at the treatment plant)

The following limits are set as flags or indicators by the County. Wastewater discharged to the system may be permitted to contain materials in concentrations greater than the limits listed here upon approval of the Administrator and as outlined in an approved Process Wastewater Service Agreement.

1) Any aldrin greater than 1.3 parts per trillion.

2) Any antimony greater than 1.0 parts per million.

3) Any arsenic greater than 0.05 parts per million.

4) Any barium greater than 2.0 parts per million.

5) Any benzene greater than 0.7 parts per million.

6) Any beryllium greater than 1.0 parts per million.

7) Any bismuth greater than 1.0 parts per million.

8) Any boron greater than 0.8 parts per million.

9) Any cadmium greater than 0.17 parts per million.

10) Any carbon tetrachloride greater than 0.05 parts per million.

11) Any chlordane greater than 6.0 parts per trillion.

12) Any chlorides greater than 250.0 parts per million.

13) Any hexavalent chromium greater than 2.0 parts per million.

14) Any total chromium greater than 0.05 parts per million.

15) Any cobalt greater than 1.0 parts per million.

16) Any copper greater than 1.0 parts per million.

17) Any cyanide greater than 0.2 parts per million, as CN.

18) Any dieldrin greater than 1.4 parts per trillion.

19) Any heptachlor greater than 1.0 parts per billion.

20)Any hexachlorobenzene greater than 0.0 parts per million.

21) Any iron greater than 2.0 parts per million.

22) Any lead greater than 0.1 parts per million.

23) Any lindane greater than 0.03 parts per billion.

24) Any manganese greater than 1.0 parts per million.

25) Any mercury greater than 0.15 parts per billion.

26) Any molybdenum greater than 1.0 parts per million.

27) Any nickel greater than 1.7 parts per million.

28) Any PCB greater than 0.45 parts per trillion.

29) Total any phenols greater than 2.1 parts per million.

30)Any radioactivity as radium - 226 and strontium - 90 greater than 3 ppc per liter and 10 ppc per liter, respectively. In the known absence of strontium - 90 and alpha emiters, the known concentration shall not be greater than 1,000 ppc per liter.

31) Any rhenium greater than 1.0 parts per million.

32) Any selenium greater than 0.17 parts per million.

33) Any silver greater than 0.05 parts per million.

34) Any tellurium greater than 1.0 parts per million.

35) Any tin greater than 1.0 parts per million.

36) Any toxaphene greater than 7.5 parts per trillion.

37)Any trichloroethlyene greater than 0.81 parts per million.

38)Any uranyl ion greater than 0.0 parts per million.

39) Any zinc greater than 5.0 parts per million.

This ordinance was duly considered following a required public hearing held on March 9, 1993, and was adopted by the Board of Supervisors of Wythe County, Virginia, at its regular meeting held on May 11, 1993, the members voting:

NAME	FOR	AGAINST	ABSENT	ABSTAIN
R. T. DuPuis	X			
Alan A. Dunford	X			
G. Andrew Kegley, Jr.	X			
Mark C. Munsey	X			
Olin F. Armentrout	X			
James J. Crosswell				X
John E. Davis, Jr.	X			

EFFECTIVE DATE

The Sewer Rules and Regulations Policies, herein contained, shall become effective upon and after 12:01 a.m. on the 12th day of May, 1993.

I certify that this is a true and correct copy taken from the May 11, 1993 minutes of the Wythe County Board of Supervisors.

Billy R. Branson, Clerk

7-26-13

PRELIMINARY ENGINEERING REPORT

EXIT 24 WASTEWATER IMPROVEMENTS
WYTHE COUNTY, VIRGINIA

July 2013

COMMONWEALTH OF VIRGINIA
KEITH E. LANE
Lic. No. 035876
07/17/2013
PROFESSIONAL ENGINEER

Prepared for:

Wythe County, Virginia
345 South 6th Street
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Exit 24 Wastewater Improvements

Preliminary Engineering Report

Table of Contents

List of Figures

List of Appendices

EXECUTIVE SUMMARY

The "Wythe County Water and Sewer Study" was prepared in 1995 by Anderson & Associates, Inc. It provided a summary of existing County wastewater systems and outlined future wastewater infrastructure throughout the County. The study recommended that wastewater service be provided to the Poplar Camp/Fosters Falls area during the 2005-2010 period.

The County wants to provide sewer service to the Exit 24 area for several reasons, including the following:

- A centralized wastewater system will be able to serve existing residents and businesses and eliminate existing onsite septic systems, including some that have been troublesome to permit and/or repair.
- Shorts Creek is listed as an impaired water by DEQ. As growth occurs in the area, a centralized wastewater system will better protect the watershed by eliminating the need for new individual septic and onsite systems.
- The existence of a centralized wastewater system will eliminate the potential for new onsite package treatment facilities that have been troublesome in other areas of the County.
- The Exit 24 area has significant potential for growth. Public water service is now available in much of the project area, which removes a significant restriction to commercial, residential, and/or industrial development. Centralized wastewater collection and treatment is needed to adequately support that growth in a way that will minimize negative environmental impacts to the area and Shorts Creek.
- Providing sewer service to this area is consistent with the County's long-range plans as outlined in the 1995 "Wythe County Comprehensive Water & Wastewater Study".

This Preliminary Engineering Report investigates several alternatives to provide wastewater service to the Exit 24 area:

Alternative 1: No Action

Alternative 2: Exit 24 Service Area

Alternative 3: Extended Gravity Areas

Alternative 4: US 52 Extended Area

Alternative 5: Shot Tower Area

Alternative 1 "No Action" includes no improvements. Wastewater needs for the Exit 24 area would continue to be served by individual septic or onsite systems. There would be no improvement in efforts to protect the water quality in Shorts Creek and the local water table. Existing deficiencies will not be addressed and no improvements will be made to support the expected future potential growth in the area. Existing septic system performance may continue to deteriorate and future development would likely be restricted due to onsite system limitations. Existing residents and businesses in the area

would not have public wastewater service. In general, the present and future needs of the area would not be met with the "No Action" Alternative.

Alternative 2 "Exit 24 Area" involves providing wastewater service to the immediate area surrounding Exit 24. This alternative includes a gravity collection system, a raw wastewater pump station, and a new wastewater treatment facility with effluent discharge into nearby Shorts Creek. This alternative serves as a base for the subsequent alternatives presented since the proposed treatment facility and collection system are required for all other alternatives except for Alternative 1 "No Action".

The estimated project cost for Alternative 2 is approximately $2,103,600. The estimated costs are itemized in Appendix B. Operation and maintenance costs to operate these facilities are estimated to be approximately $80,000 per year and are also included in the Appendix B. Exhibit B shows the improvements included in this alternative.

Alternative 2 will have limited impacts on any environmentally sensitive resource. In the long term, the project has the potential to be a significant benefit to the environment due to the elimination of existing and potential future septic and individual onsite treatment systems, resulting in better protection of Shorts Creek and the local water table.

Alternative 2 will provide the following advantages:

1. This alternative will serve the majority of existing residences and commercial sites in the area, potentially eliminating marginal or failing onsite septic systems.
2. The potential for future individual package treatment systems will be eliminated in the service area.
3. Future system extensions could expand the service area as the area builds out or to serve specific planned developments. A future extension could also be constructed to serve the Jackson Memorial Elementary School, which currently uses an individual onsite system and has expressed significant interest in connecting to a centralized wastewater system.
4. The alternative will provide wastewater service and remove a significant barrier to development of new commercial sites and residences in the Exit 24 area.
5. This alternative is consistent with the objectives of the 1995 "Wythe County Comprehensive Water & Wastewater Study" and the goals of the County.

ALT #4

Alternative 3 "Extended Gravity Areas" builds upon the "Exit 24" alternative by extending gravity sewer lines along Castleton Road (SR 607) and along and adjacent to Lead Mine Road (Hwy 69). No additional pump station and force main would be required with this alternative.

The estimated project cost for Alternative 3 is $2,652,600. This amount is inclusive of the Alternative 2 project cost, since Alternative 2 is a prerequisite of this alternative. The estimated costs are itemized in Appendix B. Operation and maintenance costs to operate

these facilities are estimated to be approximately $80,000 per year (negligible change from Alternative 2) and are also included in the Appendix B. Exhibit C shows the additional improvements included in this alternative.

Alternative 3 will provide the following advantages:

1. This option will serve an additional 8 existing residences in the area.
2. The extended area can be served using gravity sewer lines, therefore an additional pump station is not required and long-term operations and maintenance costs are minimized.
3. Preliminary field investigation identified the undeveloped property along Lead Mine Road to the west of I-77 to be the most likely for initial phases of commercial development. This alternative would extend gravity sewer in this area and may facilitate development of this property.

Future dev't

From an environmental perspective, Alternative 3 will have limited impacts on any environmentally sensitive resource and offers the same benefits as Alternative 2.

Alternative 4 "US 52 Extended Area" builds upon the "Exit 24" alternative by extending sewer service north on US 52 as far as the Jackson Memorial Elementary School. Due to the topography of the area, a pump station is required to pump raw wastewater back to the gravity sewer system described in Alternative 2. The pump station is located just north of the US 52 / Brown Town Road (SR 700) intersection. Gravity collection lines are included from the pump station on US 52 to the school and across I-77 to potential developable area. Exhibit D shows the improvements included in this alternative.

Lift sta'n rqd

The estimated project cost for Alternative 4 is $3,187,850. This amount is inclusive of the Alternative 2 project cost, since Alternative 2 is a prerequisite of this alternative. The estimated costs are itemized in Appendix B. Operation and maintenance costs to operate these facilities are estimated to be approximately $88,000 per year and are also included in the Appendix B. Exhibit D shows the additional improvements included in this alternative.

Alternative 4 will provide the following advantages:

1. This option provides wastewater service to the Jackson Memorial Elementary School and 5 additional residences. The school has expressed significant interest in connecting to a centralized system to allow them to eliminate their current individual onsite system.
2. A significant amount of additional developable area may be served.
3. This alternative would provide an additional 3,850 gallons per day of initial base flow to the wastewater treatment plant.

Jackson School accommodated

Alternative 5 "Shot Tower Area" builds upon the "US 52 Extended Area" alternative by constructing a new pump station and force main to connect the Shot Tower State Park into the proposed wastewater system. This alternative consists of the construction of a pump station near the Shot Tower State Park and a force main to convey pumped wastewater to the gravity system near the Jackson Memorial Elementary School. Other than the restroom facilities at the Shot Tower State Park, few, if any, additional customers would be added by this alternative.

Only accomodates Shot Twr Park

The estimated project cost for Alternative 5 is $3,663,350. This amount is inclusive of the Alternative 4 project cost, since Alternative 4 is a prerequisite of this alternative. The estimated costs are itemized in Appendix B. Operation and maintenance costs to operate these facilities are estimated to be approximately $96,000 and are also included in the Appendix B. Exhibit E shows the additional improvements included in this alternative.

Alternative 5 will provide the following advantages:

1. This option provides wastewater service to the restroom facilities at the Shot Tower State Park. Providing service to these facilities is consistent with the DCR goal of connecting state park facilities to public sewer.

The following conclusions were derived as part of this evaluation:

1. The County's goal, as indicated in the 1995 "Wythe County Water and Sewer Study", is to provide a centralized wastewater collection and treatment system for the Exit 24 area.
2. Based on conversations with and comments received from the Wythe County Health Department, Jackson Memorial Elementary School, and Department of Environmental Quality Southwest Regional Office, there is a significant amount of support for the project and its long term benefit to the area and the environment.
3. County water service is currently available along Lead Mine Road. Efforts are currently underway for a water extension on US 52. Once complete, the majority of the Exit 24 area will have access to County water, removing a significant barrier to commercial, industrial, and residential development in the Exit 24 area.
4. Centralized wastewater collection and treatment is needed to adequately support the expected growth in a way that will minimize negative environmental impacts to the area and Shorts Creek.
5. The "No Action" alternative does not address the goals of the County. There would be an increased risk of long term environmental issues due to failing septic and individual onsite treatment systems. Economic development in the area may remain restricted due to the lack of a public wastewater system.

W

Sewer

6. **Alternative 2 (Exit 24 Area) is the recommended alternative** because it results in the necessary infrastructure to meet the County goals and is less expensive that the subsequent alternatives.
7. Future expansion of the system is expected to occur as the area develops. Future expansion may take the form of the improvements described in alternatives 3 through 5, or may be modified based on the area needs in the future.
8. The initial sewer revenues possible from the Exit 24 area are not sufficient to offset the costs of the project, therefore countywide rates must be able to sustain the project debt service and operations costs. Over time, wastewater revenues should rise as the area develops.

Based on the study findings the County should proceed with the following recommendations:

1. Wythe County should consider whether the economic capacity exists to construct the project and pursue any funding sources that may be available.
2. If the County wishes to proceed with the project, a funding application should be submitted to DEQ through the Virginia Clean Water Revolving Loan Fund. Other sources of funding may be considered as appropriate.

I. GENERAL INTRODUCTION

The "Wythe County Water and Sewer Study" was prepared in 1995 by Anderson & Associates, Inc. It provided a summary of existing County wastewater systems and outlined future wastewater projects throughout the County. The study recommended that a wastewater system be developed in the Poplar Camp/Foster Falls area during the 2005-2010 period. Currently, each resident or wastewater generating facility in the area is served by an individual onsite septic system. There have been some problems over time with these systems, particularly with identification of areas for repair of existing drain fields or construction of new drain fields.

County water service is now available along Lead Mine Road. Efforts are currently underway for a water extension on US 52. Once complete, the majority of the Exit 24 area will have access to County water. This removes a significant barrier to commercial, industrial, and residential development in the Exit 24 area. With County water available, the lack of a centralized wastewater system becomes the most likely limitation to growth in the area, however growth is still expected to occur over time. Without centralized sewer, growth would require the proliferation of individual septic and onsite systems. In an area already known for marginal soil and topographic conditions for dispersal systems, the potential for negative environmental effects rises as the number of individual wastewater systems increase.

The 1995 "Wythe County Water and Sewer Study" recommended that a small treatment facility be constructed to serve the Poplar Camp area. The primary advantages noted were the ability to provide service to existing residents and to enhance economic growth near I-77 Exit 24.

This Preliminary Engineering Report (PER) will investigate several alternatives to provide wastewater service to the Poplar Camp / Exit 24 area.

II. PROJECT PLANNING AREA

The project area is located in the eastern part of Wythe County generally surrounding Exit 24 on Interstate 77. The area is south of the New River and adjacent to the Wythe County / Carroll County border. The study area is shown in Exhibit A.

This area is in the Blue Ridge and Valley and Ridge physiographic provinces. The topography evolved from the folding and faulting of sedimentary rocks by the mountain-building process. During a long period of geologic erosion, ridges formed in areas of the more resistant rocks and valleys formed in the less resistant rock areas.

The most common soil type in this area is Shottower loam. These soils are generally deep, well drained, moderately permeable alluvium derived from limestone, sandstone, shale, and quartz. Other soil types found in the area include Jefferson cobbly loam, Wheeling loam, and Timberville silt loam.

Shorts Creek is the primary water body in the study area. Shorts Creek generally flows from south to north through the study area and joins the New River near the Shot Tower State Historical Park to the north of the study area. Shorts Creek has been identified as an impaired water by DEQ due to the presence of E. coli and fecal coliform.

Transportation facilities are a major area attribute. Interstate 77 runs through the project area. The primary project study area centers on the Exit 24 interchange area with Highway 69 – Lead Mine Road. Exit 24 is the dominant transportation feature in the area and is expected to be a primary facilitator for future development in the area. US 52 also runs through the study area parallel to I-77, with easy access to I-77 via Lead Mine Road to Exit 24.

Electricity and telephone utilities are available in most of the study area. County water is already available for a portion of the study area, primarily along Lead Mine Road and US 52 near Exit 24. Wythe County is currently working towards extending water service along US 52. Once this is complete, all of the area along major highways through the study area will have public water available.

Farming is currently the most prominent land use in the study area. In the immediate Exit 24 vicinity, there is a cluster of existing residential lots along Old 52 Road and Beal Road. Some additional residential lots are spaced along the major roadways in the study area. The most significant commercial property in the area is the Kangaroo Express on Lead Mine Road, which consists of auto and truck fuel stations, a convenience store, and a Subway restaurant. There are also a few small commercial lots along Lead Mine Road and US 52. The Jackson Memorial Elementary School is located on US 52 approximately 1.5 miles north of the Exit 24 interchange area.

There is a significant amount of undeveloped property surrounding the Exit 24 interchange. Much of this property is located on the west side of I-77 and due to the natural topography is easily visible from the interstate. Lead Mine Road offers easy

access to Exit 24, therefore much of this property appears to be well suited for commercial development.

This PER assumes wastewater flow of 270 gallons per day per household. This amount is based on a previously determined average user rate for the County. Flows for existing commercial connections were based on estimates provided by those facilities or estimated based on similar facilities.

As part of this preliminary engineering effort, letters were sent out to environmental agencies requesting information on historic, natural, and other resources within the project area. These findings will be incorporated into the Environmental Report.

The project planning area is located within the Lead Mines Magisterial District of Wythe County. Population data for Wythe County and the local district are summarized below:

Population Data			
	1990 Census	2000 Census	2010 Census
Wythe County	25,466	27,599	29,235
Lead Mines District	3,760	4,556	5,017

The overall County population estimates from 1990 to 2010, show an average growth rate of approximately 0.7%. Growth in the Lead Mines District was higher than the County average during this period, at nearly 1.5% per year. In the 1995 "Wythe County Comprehensive Water & Wastewater Study", the population growth rate for the Interstate 81/77 corridor was assigned at 3% per year. This study specifically noted, however, that the Poplar Camp area has the potential for higher growth near the exit and that the growth "could be boosted by the extension of public facilities."

The U.S. Census Bureau 2006-2010 American Community Survey estimated Median Household Income of $39,631 within the Lead Mines District. This is similar to the Wythe County level of $38,948 and approximately 65% of the state median household income of $61,406.

III. EXISTING FACILITIES

Wythe County has been extending and improving water and wastewater services to the eastern part of the County over the past 10 years. These facilities improve the resident's quality of life and foster economic growth.

Water Facilities

The availability of public water is a critical factor for enhancement of economic growth in the area. Wythe County, through a joint ownership with the Carroll County Public Service Authority, already has the ability to provide water service to much of the Exit 24 area. A 16" water transmission main runs along Lead Mine Road and south along US 52 into Carroll County. Efforts are currently underway to extend an 8" water line north along US 52 to the Jackson Memorial Elementary School. While most of the area is currently served by individual private wells, with the completion of this water extension, most of the available property in the Exit 24 study area will be within close proximity of County water service.

Wythe County has a countywide water rate, which is divided into residential and commercial classifications. Currently the residential and commercial rates are the same, although this has not always been the case in the past. The monthly user fees are as follows:

Residential Rate	
First 1,000 gallons, minimum	$11.00
Each additional 1,000 gallons	$9.00 per 1,000 gallons
Commercial Rate	
First 1,000 gallons, minimum	$11.00
Each additional 1,000 gallons	$9.00 per 1,000 gallons

Wastewater Facilities

Currently there are no public or private community wastewater facilities in the Exit 24 study area. Residences all have individual septic systems. Both the Kangaroo Express and the Jackson Memorial Elementary School have individually designed onsite systems. Given ready access to the area via I-77 and the Exit 24 interchange and the availability of public water, growth is expected to occur in the area. The lack of a centralized wastewater system may be a limiting factor in the economic development of the study area; however growth is still likely in areas that are able to support individual onsite wastewater systems.

Wythe County operates centralized wastewater facilities in other parts of the County, but none in close proximity to the Exit 24 study area. The nearest wastewater

treatment plant is the Austinville WWTP, located approximately 5 miles west of the study area.

Wythe County has a countywide sewer rate, which is divided into residential and commercial classifications. The monthly user fees are as follows:

Residential Rate	
First 3,000 gallons, minimum	$22.00
Each additional 1,000 gallons	$6.90 per 1,000 gallons
Commercial Rate	
First 4,000 gallons, minimum	$55.00
Each additional 1,000 gallons	$8.85 per 1,000 gallons

IV. PROJECT NEED

While portions of Wythe County have experienced significant residential and commercial growth, the growth rate in the Exit 24 area has been restricted by a lack of public utilities. The need for utilities in this area was documented in the 1995 "Wythe County Comprehensive Water & Wastewater Study". Since that time, efforts have been made and are still ongoing to provide public water service to the area. It is believed that growth in the area will occur over time due to the availability of County water. The lack of wastewater service remains a primary limiting factor for growth in the area.

It is possible for growth to occur using individual onsite wastewater systems. In some areas, the soils, terrain, and groundwater conditions are likely suitable to support onsite systems. These types of onsite systems will generally not support high-density residential or significant commercial/industrial development, however. According to the Wythe County Health Department, there have been some problems with existing and proposed septic systems in the area, particularly for larger wastewater producers and in areas where drainfield space is limited. Rock and natural springs have been problematic when attempting to repair existing or to locate new septic systems. In some cases suitable repair areas are not available when an existing septic system is found to have problems. Shorts Creek is listed by DEQ as an impaired water (see Appendix C) due to the presence of E. coli and fecal coliform. Onsite wastewater systems are not specifically listed as a contamination source, however it is certainly possible that they contribute and the potential for additional contamination would be expected to increase if additional onsite systems are constructed in the watershed.

Without a centralized wastewater system, prospective commercial/industrial developers are left with little choice other than to attempt to permit and construct individual onsite package treatment/disposal systems. Wythe County has had experience with these systems in other areas and they have generally been a long-term problem due to their need for constant maintenance that is often not effectively provided, leading to system failures. Constructing a centralized wastewater collection and treatment system in the Exit 24 area would allow existing residences and commercial properties in the area to eliminate their existing onsite septic systems and would reduce a significant threat to water quality in Shorts Creek and the local water table. The area and the County would benefit from the elimination of current and potential future individual wastewater systems and from economic growth in the area.

Need statement

Estimated initial wastewater flows from existing residences and commercial facilities are provided in the table below. As previously indicated, residential flows were assumed to be 270 gpd per residence. Estimated commercial flows were determined based on water usage estimates provided by the potential customer, comparisons to similar facilities where flows were known, or published guidelines for the type of facility.

Existing/Initial Estimated Wastewater Flows			
Exit 24 Area:			
Residential			
	17 Single Family Residences	@ 270 gpd/residence	4,590 gal/day
Commercial			
Kangaroo Express	Auto Fueling, Truck Fueling, Subway Restaurant	2,500 gal/day	2,500 gal/day
Pure Fuel Station/Store	Abandoned		
Roy's Garage	Limited Use – assumed 5 vehicles serviced/day	@ 10 gpd/vehicle	50 gal/day
Storage Building/Garage	Not occupied		
Poplar Camp Sheet Metal	Assumed as factory - 2 shifts	@ 20 gpd/shift	40 gal/day
Furniture Shop	Currently unoccupied but under renovation – assumed 5 shifts	@ 20 gpd/shift	100 gal/day
		Exit 24 Area Total:	**7,280 gal/day**
Extended Gravity Areas: (Extended areas on Lead Mine Road and Castleton Road)			
Residential			
	8 Single Family Residences	@ 270 gpd/residence	2,160 gal/day
		Extended Gravity Areas Total:	**2,160 gal/day**
US 52 Extended Area:			
Residential			
	5 Single Family Residences	@ 270 gpd/residence	1,350 gal/day
Commercial			
Jackson Memorial Elementary School	School usage per maintenance staff – includes adjacent Rescue Squad Building	2,500 gal/day	2,500 gal/day
		US 52 Extended Area Total:	**3,850 gal/day**
Shot Tower Area:			
Commercial			
Shot Tower State Park Restroom Facilities	Public restroom facilities adjacent to the shot tower	@ 5 gpd/person x est. 50 persons/day	250 gal/day
		Shot Tower Area Total:	**250 gal/day**
		Total All Areas:	**13,540 gal/day**

In the 1995 "Wythe County Comprehensive Water & Wastewater Study", the population growth rate for the Interstate 81/77 corridor was assigned at 3% per year. This study specifically noted, however, that the Poplar Camp area has the potential for higher growth near the exit and that the growth "could be boosted by the extension of public facilities."

While projected growth rates may be useful in estimating future wastewater flows from larger, more developed areas of the county, future wastewater flows from this study area are expected to be influenced significantly by the addition of commercial establishments in the immediate Exit 24 vicinity. It is nearly impossible to estimate wastewater flows from a mature, developed Exit 24 area with a high degree of certainty. It is possible, however, to make a reasonable estimate based on a similar area that has already developed. In this case, the nearby Exit 14 area in Carroll County was selected.

Exit 14 on Interstate 77 in Carroll County offers access to and from Carrollton Pike (US 58/221) near Hillsville, Virginia. The immediate area surrounding the exit has been developed and primarily consists of hotels, fuel centers, and restaurants. The majority of the commercial development has occurred on the west side of I-77, adjacent or very close to Carrollton Pike. Similar to the Exit 24 area, the west side is higher in elevation and is more visible from the interstate. The east side area adjacent to US 58/221 is not as heavily developed, with only one significant commercial property. There is, however, a developing industrial park on the east side.

Comparable Post-Development Flows – Exit 14 Area			
Commercial Property Name & Description	**Address (East/West Side of I-77)**	**Average Monthly Water Usage (gpd) (Aug 2011-July 2012)**	**Maximum Monthly Water Usage (gpd) (Aug 2011-July 2012)**
Red Carpet Inn (Hotel – 41 Rooms)	2666 Old Galax Pike (East Side)	989	1,533
Peking Palace (Chinese Restaurant)	2664 Carrollton Pike (East Side)	827	1,043
The Pantry (12 Pumps, Conv. Store, Subway)	2662 Old Galax Pike (East Side)	1,544	2,360
Clark Exxon (8 Pumps + Conv. Store)	94 Airport Road (West Side)	842	1,267
Best Western (Hotel – 48 Rooms)	57 Airport Road (West Side)	3,444	6,133
Quality Inn (Hotel – 81 Rooms)	85 Airport Road (West Side)	2,453	4,533
Holiday Inn Express (Hotel – 54 Rooms)	1994 Carrollton Pike (West Side)	3,203	4,600
Shoney's (Restaurant)	2042 Carrollton Pike (West Side)	2,358	2,800
Wendy's (Restaurant)	2076 Carrollton Pike (West Side)	1,650	2,133
Hampton Inn / BP / Countryside Restaurant (Hotel – 86 Rooms, 12 Pumps, Restaurant)	94 Farmers Market Drive (West Side)	6,917	9,000
McDonalds (Restaurant)	1877 Carrollton Pike (West Side)	2,836	4,300
Comfort Inn (Hotel – 73 Rooms)	151 Farmers Market Drive (West Side)	3,169	4,667
Family Medical (Clinic / Medical Office)	1953 Carrollton Pike (West Side)	124	187
Super 8 (Hotel – 65 Rooms)	99 Farmers Market Drive (West Side)	3,319	4,733
Gulf Fuel / Pizza Inn / TCBY (8 Pumps, 4 Diesel Bays, Conv. Store, Restaurant)	52 Farmers Market Drive (West Side)	2,236	3,167
Total Exit 14 Developed Commercial Area:		**Average Month: 35,911 gal/day**	**Maximum Month: 52,456 gal/day**
(Water usage data provided by Carroll County PSA.)			

The commercial development surrounding Exit 14 listed above covers approximately 60 acres, including adjacent roadways, etc. The immediate Exit 24 area appears to have enough undeveloped property to support a similar level of commercial development. Additional nearby undeveloped property is also available for other residential, commercial and/or industrial development over time. The introduction of water and potentially wastewater facilities is expected to remove a significant restriction and allow the area to prosper.

The County wants to provide sewer service to the Exit 24 area for several reasons. First, a centralized wastewater system will be able to serve existing residents and businesses and eliminate potentially troublesome onsite septic systems. Second, the existence of a centralized wastewater system will eliminate the potential for new onsite package treatment facilities that have been troublesome in other areas of the County. Third, providing service to the area removes a potential restriction to commercial, residential, and/or industrial development. Finally, providing sewer service to this area is consistent with the County's long-range waster plans as outlined in the 1995 "Wythe County Comprehensive Water & Wastewater Study".

Future plans & needs

Based on conversations with and comments received from various local and state organizations, there is a significant amount of support for the project. The Wythe County Health Department indicated that it has been challenging at times to properly site and design onsite systems, particularly when lot sizes are small. The presence of rock and natural springs in some areas makes it difficult if not unrealistic to site new or repair areas. Personnel at the Jackson Memorial Elementary School expressed enthusiasm at the potential for a centralized system, noting maintenance and performance concerns with their onsite system. The Department of Environmental Quality Southwest Regional Office noted in a letter that "The Department of Environmental Quality fully supports the proposed project in Wythe County. The completed project will improve the quality of life of Virginia's citizens."

V. ALTERNATIVES CONSIDERED

This Preliminary Engineering Report will investigate five alternatives to provide wastewater service to the Exit 24 area:

Alternative 1 "No Action"

Alternative 2 (Exit 24 Area)

Alternative 3 (Extended Gravity Areas)

Alternative 4 (US 52 Extended Area)

Alternative 5 (Shot Tower Area)

To evaluate these alternatives the following procedure was followed:

1. Preliminary mapping was obtained and the study area was defined.
2. A preliminary meeting was held with the County to confirm the study area and the project goals.
3. Field investigations were made to confirm existing land uses, topography, and to confirm the potential treatment plant site and effluent discharge location.
4. Existing properties were identified and existing wastewater flows were estimated.
5. Preliminary wastewater system layouts were developed for the area.
6. Environmental review agencies were contacted to request their input on the project.
7. A survey of the Exit 14 area was made and water usage data was obtained from Carroll County PSA for use in predicting commercial potential of the study area.
8. Speculative discharge limits were requested from DEQ for the proposed effluent discharge into Shorts Creek.
9. Additional field investigation was performed, including discussions with existing commercial and government-owned facilities in and near the study area.
10. Preliminary alternatives and cost estimates were developed and discussed with the County.
11. Alternatives were refined based on County input and feedback from environmental review agencies, preliminary cost estimates were updated, and the Preliminary Engineering Report was developed.

Alternative 1 "No Action"

The "No Action" alternative includes no improvements. Wastewater needs for the Exit 24 area would continue to be served by individual septic or onsite package systems. Existing deficiencies will not be addressed and no improvements would be made to support future potential growth in the area.

Existing septic system performance may continue to deteriorate and future development would likely be severely restricted due to the limitations of septic and onsite package systems. Existing residents and businesses in the area would not have public wastewater service. In general, the present and future needs of the area would not be met with this alternative.

The primary advantages of the "No Action" alternative are as follows:

1. There is no upfront capital cost to the County.
2. There are no construction-related environmental impacts.

Disadvantages of the "No Action" alternative include the following:

1. There are potential long-term negative environmental impacts related to failures of existing septic and onsite treatment systems.
2. New commercial and residential development will be forced to use individual septic or onsite treatment systems, adding to the risk of further potential degradation of Shorts Creek and the local water table.
3. The County will make no progress towards the long-term wastewater goals identified in the 1995 "Wythe County Comprehensive Water & Wastewater Study".
4. The lack of a centralized wastewater system will continue to act as a limitation to economic growth and development of the study area.
5. Lack of a centralized wastewater system may encourage the use of individual package systems in the future, potentially leading to additional long-term maintenance and environmental impacts.

Alternative 2 "Exit 24 Area"

This alternative assumes that wastewater service will be provided to the immediate area surrounding Exit 24. This alternative will include a gravity collection system, a raw wastewater pump station, and a new wastewater treatment facility with effluent discharge into nearby Shorts Creek. This alternative also serves as a base for the other alternatives presented since the proposed treatment facility and collection system are required for all other alternatives except for Alternative 1 "No Action".

A preliminary layout of the "Exit 24 Area" alternative is provided as Exhibit B. The immediate area surrounding Exit 24 has a number of existing residences and a limited number of existing commercial properties. According to the Wythe County Health Department, some of these properties have already had problems related to their septic systems, particularly in finding suitable expansion or repair areas.

Gravity sewer lines will be installed to serve the existing residences and commercial properties in the area. There are also adjacent undeveloped lots that would likely benefit from the availability of sewer service. These gravity lines will also be able to convey wastewater from extended areas identified in other alternatives and/or areas that may be expanded to in the future.

This alternative requires the construction of a wastewater treatment facility. The treatment facility is proposed to be located on Castleton Road (SR 607) near Shorts Creek. This site was selected due to the availability of land, the close proximity to Shorts Creek (the effluent receiving stream), and the ability to collect wastewater from the service area by gravity to a single pump station located either at the treatment plant site or near the US 52 / Castleton Road intersection.

As indicated in the Section IV – Project Need, initial wastewater flows from the Exit 24 area are estimated at approximately 7,280 gallons per day. At full build-out, the area has the potential to collect much higher flows. Using the comparison to the Exit 14 area, maximum monthly flows in excess of 50,000 gallons per day may be reasonable in time. With the addition of some extended areas as discussed in other alternatives, ultimate flows may require a treatment facility of up to 100,000 gallons/day of capacity. Development to that extent will take some considerable amount of time, however, and initially constructing a treatment facility of that size would not be cost effective. In addition, oversizing the facility may have negative ramifications on initial treatment effectiveness since the facility would be severely under loaded at initial flows. This alternative uses a design treatment plant capacity of 40,000 gallons per day. The initial estimated flow of 7,280 gallons per day represents approximately 18% of treatment capacity, which is appropriate for a system of this size and strikes a reasonable balance of enough flow to operate the facility at startup while leaving sufficient capacity to accommodate likely development. The facility should be designed such that future expansion to 60,000-100,000 gallons per day capacity is considered.

Preliminary effluent discharge limits were requested from the DEQ Southwest Regional Office based on a discharge of 60,000 gallons per day and discharge into Shorts Creek. The preliminary limits provided by DEQ were 30 mg/L BOD5, 30 mg/L TSS, 5mg/L NH3-N, and no DO requirement. Based on the significant amount of base flow in Shorts Creek, it is expected that similar limits would apply for a future expansion up to 100,000 gallons per day. Based upon these expected effluent limits, a secondary biological treatment facility should be an appropriate treatment approach. Such a system will include the following major unit processes:

- Raw wastewater pumping (either at the treatment plant site or nearby)
- Screening / solids removal
- Flow equalization
- Aerated biological treatment
- Secondary settling/clarification

- Effluent disinfection
- Flow monitoring
- Discharge to Shorts Creek
- Related aeration, pumping, and flow splitting

Critical processes will be designed with appropriate duplicity and/or bypass to meet DEQ reliability requirements. It is anticipated that the treatment facility will be a manufactured facility utilizing steel tanks. As previously indicated, the raw wastewater pump station may be either located at the treatment facility site and integrated into the treatment system, or due to topography and constructability it may be located remotely near the US 52 / Castleton Road intersection.

According to the Virginia Sewage Collection and Treatment Regulations, treatment facilities with capacities less than or equal to 0.04 MGD using biological mechanical methods are recommended to be staffed 4 hours per day by a Class IV (or better) operator. If the facility is expanded beyond 0.04 MGD, the recommended attendance increases to 8 hours per day by a Class III (or better) operator.

The estimated project cost for Alternative 2 is approximately $2,103,600. The estimated costs are itemized in Appendix B. Operation and maintenance costs to operate these facilities are estimated to be approximately $80,000 per year and are also included in the Appendix B. Exhibit B shows the improvements included in this alternative.

Alternative 2 will have limited impacts on any environmentally sensitive resource. In the long term, the project has the potential to be a significant benefit to the environment due to the elimination of existing and potential future septic and individual onsite treatment systems.

Alternative 2 will provide the following advantages:

1. This alternative will serve the majority of existing residences and commercial sites in the area, particularly those on the smallest lots, potentially eliminating troublesome onsite septic systems.
2. The potential for problematic individual package treatment systems will be eliminated in the service area.
3. There are potential positive long-term benefits of eliminating marginal or failing individual septic and potential future individual package systems.
4. Future system extensions could expand the service area as the area builds out or to serve specific planned developments.
5. The alternative will provide wastewater service and remove a significant barrier to development of new commercial sites and residences in the Exit 24 area.

6. This alternative is consistent with the objectives of the 1995 "Wythe County Comprehensive Water & Wastewater Study".

Disadvantages of the "Exit 24 Area" alternative include the following:

1. Initial project costs are relatively high compared to the initial number of customers/amount of flow.
2. Facilities in extended areas such as Jackson Memorial School would not be served initially.
3. Depending on the preferred location for development, future extensions may be required to serve proposed commercial locations.

Alternative 3 "Extended Gravity Areas"

This alternative builds upon the "Exit 24" alternative by extending gravity sewer lines along Castleton Road (SR 607) and along and adjacent to Lead Mine Road (Hwy 69). No additional pump station and force main would be required with this alternative.

This alternative adds eight additional residential customers, resulting in an estimated 2,160 gallons per day of additional flow. This would increase the total expected initial flow to the treatment facility by 2,160 gallons per day to approximately 9,440 gallons per day, or 24% of the initial 40,000 gallons per day capacity.

The estimated project cost for Alternative 3 is $2,652,600. This amount is inclusive of the Alternative 2 project cost, since Alternative 2 is a prerequisite of this alternative. The estimated costs are itemized in Appendix B. Operation and maintenance costs to operate these facilities are estimated to be approximately $80,000 per year (negligible change from Alternative 2) and are also included in the Appendix B. Exhibit C shows the additional improvements included in this alternative.

This alternative will provide the following advantages:

1. This option will provide service to an additional 8 existing residences in the area.
2. The extended area can be served using gravity sewer lines, therefore an additional pump station is not required and long-term operations and maintenance costs are minimized.
3. Preliminary field investigation identified the undeveloped property along Lead Mine Road to the west of I-77 to be a likely area for initial phases of commercial development. This alternative would extend gravity sewer in this area and may facilitate development of this property.

Disadvantages of the "Extended Gravity Areas" alternative include the following:

1. The project cost of this alternative is high for the small number of current connections.
2. The nearby presence of the collection system described in Alternative 2 is expected to be sufficient to demonstrate that wastewater service is available in the area. The gravity extensions described in this alternative could be constructed at a later time once there are firm plans to develop a particular site.
3. Depending on the nature and configuration of future development in the area, a more advantageous piping layout may be possible in the future.

Alternative 4 "US 52 Extended Area"

This alternative builds upon the "Exit 24" alternative by extending sewer service north on US 52 as far as the Jackson Memorial Elementary School. Due to the topography of the area, a pump station is required to pump raw wastewater back to the gravity sewer system described in Alternative 2. The pump station is located just north of the US 52 / Brown Town Road (SR 700) intersection. Exhibit D shows the improvements included in this alternative.

This alternative allows for wastewater service to be provided along US 52 from Brown Town Road north to the Jackson Memorial Elementary School. The school and adjacent rescue squad facility is currently served with an individual onsite treatment system. While the system is functional, it does require routine maintenance and there are concerns related to the eventual need for repair and upgrades. School maintenance personnel have indicated a strong desire for public water and wastewater service. Public water is the greatest concern and the County is presently working towards a water extension to the school. While County wastewater service is viewed as less critical at this time, the school would prefer to be on a public system.

The installation of the pump station would also allow for additional gravity sewer to be extended west (with an I-77 bore & jack crossing) to serve additional undeveloped area on the west side of I-77. This area, which is in excess of 100 acres, does not currently have direct access to Lead Mine Road, but a future access road could be constructed to connect to either Lead Mine Road or SR 608. This area could ultimately be developed for industrial, residential, or commercial purposes.

Initially, this alternative is expected to add approximately 3,850 gallons per day of flow from the school and 5 existing residences. Future flows could be substantially higher, particularly if the area west of I-77 is developed. It is possible that such a development may take place beyond the timeframe of this study, however.

The estimated project cost for Alternative 4 is $3,187,850. This amount is inclusive of the Alternative 2 project cost, since Alternative 2 is a prerequisite of this alternative. The estimated costs are itemized in Appendix B. Operation and maintenance costs to operate these facilities are estimated to be approximately $88,000 per year and are also included in the Appendix B. Exhibit D shows the additional improvements included in this alternative.

Alternative 4 will provide the following advantages:

1. This option provides wastewater service to the Jackson Memorial Elementary School and 5 additional residences.
2. A significant amount of additional developable area may be served.
3. This alternative would provide an additional 3,850 gallons per day of initial base flow to the wastewater treatment plant.

Disadvantages of the "US 52 Extended Area" alternative include the following:

1. The project cost of this alternative is high for the small number of current connections, particularly since an additional pump station is required.
2. Significant development in this area is expected to lag the immediate Exit 24 area, therefore it may be quite some time before construction of this alternative would result in significant wastewater flow above the limited amount from the school and existing residents.

Alternative 5 "Shot Tower Area"

This alternative builds upon the "US 52 Extended Area" alternative by constructing a new pump station and force main to connect the Shot Tower State Park into the proposed wastewater system. This alternative was added to address a comment received by the Virginia Department of Conservation and Recreation (DCR) during the environmental review process related to their desire for connection of New River Trail State Park facilities to public water and sewer.

There are two major facilities associated with the New River Trail State Park located near the Exit 24 area. The Shot Tower Historical State Park is located approximately 1.5 miles north of the Exit 24 interchange on US 52. Foster Falls is over 2 miles beyond the Shot Tower along Foster Falls Road. The Shot Tower site has an adjacent public restroom facility with an onsite septic system. Foster Falls has a variety of facilities that are currently using individual septic systems, but construction of a packaged treatment facility is currently underway. Completion is expected in early 2013. Given the fact that this treatment system is already under construction and the expected high cost of constructing the required pump station and over two miles of force main, wastewater service to Foster Falls was eliminated from this alternative.

In order to connect the Shot Tower facilities to the Exit 24 system, another pump station is required with approximately 0.5 miles of force main. Very few, if any, additional connections could be made to existing residences. While flows from the restroom facility at the park are unknown, they are expected to be quite low. For the purposes of this study, it was estimated that wastewater flows from the park restroom facility average approximately 250 gallons per day.

The estimated project cost for Alternative 5 is $3,663,350. This amount is inclusive of the Alternative 4 project cost, since Alternative 4 is a prerequisite of this alternative. The estimated costs are itemized in Appendix B. Operation and maintenance costs to operate these facilities are estimated to be approximately $96,000 and are also included in the Appendix B. Exhibit E shows the additional improvements included in this alternative.

Alternative 5 will provide the following advantages:

1. This option provides wastewater service to the restroom facilities at the Shot Tower State Park. Providing service to these facilities is consistent with the DCR goal of connecting state park facilities to public sewer.

Disadvantages of the "Shot Tower Area" alternative include the following:

1. The project cost of this alternative is high for what is initially a single service connection to the Shot Tower restroom facilities.

VI. ALTERNATIVE SELECTION

Alternative Evaluation Process

In general, the alternatives developed for this PER were evaluated based on the factors described below:

Project Goals: Is the alternative consistent with the long-term goals of the County? Are the present and expected future needs of the project area met?

Capital Cost: Preference will be given to alternatives that meet the project goals at a lower overall project cost.

Operating & Maintenance Cost: Preference will be given to alternatives that result in lower ongoing operating and maintenance costs relative to the size of the customer base.

Environmental Considerations: The alternatives will be compared based on the expected environmental impacts associated with each project.

Alternative Comparison

Alternative 1 "No Action"

The "No Action" alternative includes no improvements and the project goals will not be satisfied. The Exit 24 area will continue to utilize individual septic or onsite wastewater systems for existing and future developed properties. There would be no improvements in efforts to protect the water quality in Shorts Creek and the local water table. Existing septic and onsite system performance may continue to deteriorate. Economic development in the area may remain limited by the lack of a centralized wastewater system. In general, the present and future needs of the area are not met.

The "No Action" alternative has no capital or O&M costs, however this comes with the result of not at all meeting the project goals.

The "No Action" alternative has no construction related environmental impacts, however it does result in potential negative environmental impacts from failing existing septic and onsite wastewater systems. There is also the possibility of future proliferation of individual package treatment systems and the environmental risks associated with those systems.

The "No Action" alternative was eliminated since the goals of the project would in no way be met.

Alternative 2 "Exit 24 Area"

The "Exit 24" area alternative acts as the base "action" alternative. This alternative is consistent with the long-term goals of the project. The improvements described make up the foundation of a centralized wastewater collection and treatment system in the project

area. The majority of the existing developed lots in the study area are served by the proposed collection system. While collection system extensions will be necessary to serve much of the undeveloped property and/or additional existing customers, these extensions could be done in the future once growth in the area occurs or for service to specific planned developments.

The "Exit 24 Area" alternative has an estimated project cost of $2,103,600 and an estimated O&M cost of approximately $80,000 per year. Based on the estimated construction and O&M costs, growth in the Exit 24 area will be necessary to ultimately make the project cost effective. Based on the initial expected wastewater flows and current County sewer rates, initial annual sewer fees are expected to be approximately $13,000 per year (assuming 17 residential connections at minimum rate of $22/month plus $683/month from one commercial connection), which is considerably less than the expected annual O&M cost. As growth in the area occurs due to the availability of wastewater service, however, sewer revenues should increase accordingly. The County would also be expected to benefit from economic growth in the area through sales taxes, property taxes, and potentially jobs creation.

The "Exit 24 Area" alternative is expected to have relatively minor initial impacts to the environment, and long-term is expected to be a net benefit compared to "No Action" alternative. Piping installation in road rights-of-way and through easement areas will have limited impact. Treated effluent discharge into Shorts Creek is not expected to have a significant impact, as is evident based on the estimated discharge limits provided by DEQ. Any minor environmental impacts of this alternative may also be more than offset by the benefit of eliminating a number of existing septic and individual onsite wastewater systems as well as the elimination of potential future individual wastewater systems in the area.

Alternative 3 "Extended Gravity Areas"

The "Extended Gravity Areas" alternative builds upon the "Exit 24 Area" alternative by extending gravity sewer along Castleton Road and Lead Mine Road. This alternative is consistent with the goals of the project. These gravity extensions would add a limited number of existing customers and both would increase the amount of undeveloped property immediately adjacent to a gravity sewer line.

The "Extended Gravity Areas" alternative is not expected to significantly change the ongoing O&M costs since only gravity sewer would be added. The additional estimated capital cost of approximately $550,000 is very significant given that only eight additional customers will be added. While future growth could certainly occur, particularly along Lead Mine Road, it is likely more prudent to delay these extensions until such growth is more imminent.

Since the "Extended Gravity Areas" alternative simply adds additional gravity sewer line to the project, the environmental impacts are expected to be almost identical to the "Exit 24 Area" alternative.

Alternative 4 "US 52 Extended Area"

The "US 52 Extended Area" alternative builds upon the "Exit 24 Area" alternative by adding a wastewater pump station near the intersection of US 52 and Brown Town Road with a force main along US 52 to connect to the "Exit 24 Area" gravity sewer near Castleton Road. The pump station would allow additional gravity sewer to be constructed along US 52 to Jackson Memorial Elementary School and potentially across I-77 to serve a large portion of undeveloped property that may be suitable for industrial, commercial, or residential development. The alternative is consistent with the project goals and provides potential wastewater service to a significant amount of undeveloped property in the area. It also allows the Jackson Memorial Elementary School to connect to the wastewater system, which addresses the schools long-term goal of connecting to public water and sewer facilities.

The "US 52 Extended Area" alternative adds approximately $1.1 million in project costs and $8,000 per year O&M costs to the project. Initially, only the school and 5 residences would be added to the system. At current County sewer rates, these additions would be expected to contribute approximately $9,500 per year. While this amount may cover the additional O&M costs, it would not be sufficient to justify the initial capital requirements. While the work described in this alternative is expected to be desirable in the future, it is not recommended at this time due to the small number of existing customers and the likelihood that future development in this area may be several years off. Development in this area is expected to lag development in the immediate Exit 24 area and along Lead Mine Road.

The "US 52 Extended Area" alternative is expected to have relatively minor additional environmental impacts beyond those described in the "Exit 24 Area" alternative. The pump station would be sited to avoid or minimize environmental concerns and prime farm land, and the rest of the work is piping in rights-of-way and easement areas with minimal impacts.

Alternative 5 "Shot Tower Area"

The "Shot Tower Area" alternative builds upon the "US 52 Extended Area" alternative by adding a wastewater pump station near the Shot Tower State Park and a force main to convey the pumped wastewater along US 52 to the terminal gravity manhole near Jackson Memorial Elementary School. While this alternative is consistent with the overall goals of the project, it does not add significantly to those goals unless development extends considerably outside of the Exit 24 area.

The "Shot Tower Area" alternative adds approximately $475,000 in project costs and $8,000 per year O&M costs to the project in addition to the "US 52 Extended Area" costs. It is likely that Shot Tower State Park would be the only customer added initially, although one to two residential connections may be possible. This alternative does not appear to be cost effective for the County and is therefore eliminated.

VII. RECOMMENDED ALTERNATIVE

Alternative 2 "Exit 24 Area" is the recommended alternative based on the above criteria and evaluation. It represents the lowest cost alternative that meets the overall goals and objectives of the project. The work described in Alternatives 3 through 5 may be performed in the future as the area develops. At this time, however, these alternatives are not cost effective for the County.

The following is a description of proposed improvements:

Project Description

- Gravity Sewer Collection System: The gravity sewer collection system consists of a network of 8" gravity sewer piping in the immediate Exit 24 area. Collection system piping will connect to the pump station and will run along road rights-of-way and easement areas as generally shown in Exhibit B. The collection system will include laterals to serve existing residences on Old 52 Road, Beal Road, and Lead Mine Road and existing commercial properties on US 52 and Lead Mine Road.

- Wastewater Pump Station: A wastewater pump station will be constructed either at the treatment plant site or nearby in the vicinity of the US 52 / Castleton Road intersection. Raw wastewater will flow through the gravity collection system to this pump station where it will be pumped to the treatment facility. This pump station will consist of a concrete wet well with two submersible wastewater pumps, each capable of pumping a minimum of 120 gallons per minute. The station will be expandable to 240 gallons per minute to accommodate future expansion of the collection system.

- Wastewater Treatment Plant: A wastewater treatment plant will be constructed adjacent to Castleton Road near the intersection with US 52 on a former quarry site. The treatment facility will initially be designed to treat an average daily flow of 40,000 gallons per day. This capacity was selected as the most appropriate to provide capacity for initial development of the Exit 24 Area while remaining reasonably sized to be able to effectively operate at the initial expected flow rate. Limiting the treatment capacity to 40,000 gallons per day has the additional benefit of maintaining a Class IV treatment works classification, allowing for a limited attendance recommendation of 4 hours per day. The plant will be designed to facilitate future expansion to accommodate increased flows as the Exit 24 area develops.

  Based upon the capacity and expected discharge limits, the treatment plant facility will be a secondary biological treatment facility. Based on the capacity of the system, it is expected that it will be a "package" system with all major components (including the treatment structure, equipment, and controls) provided by a single manufacturer. The system will have the following major components:

or MBR due to low flow rates!?

- Screening / solids removal
- Flow equalization
- Aerated biological treatment
- Secondary settling/clarification
- Effluent disinfection
- Flow monitoring

Discharge from the treatment facility will be to the adjacent Shorts Creek. A gravity outfall line will be constructed from the treatment facility to Shorts Creek.

Total Project and O&M Cost Estimates

The project budget is summarized as follows:

Construction	$1,651,200
Engineering	
Basic Services	$169,300
Inspection	$78,000
Additional Services	$12,500
Legal	$5,000
Bond Counsel	$5,000
Land Acquisition	$100,000
Contingencies	$82,600
TOTAL PROJECT COST	$2,103,600

The annual estimated O&M costs are listed below:

Labor	$39,420
Electricity	$12,360
Consumables, Chemicals, & Misc.	$8,400
Parts & Equipment Replacement	$12,625
Transportation & Administration	$6,895
TOTAL O&M COST	$79,700

Project Funding

Two primary funding sources have been identified that may be able to provide long-term financing for the proposed project.

Rural Development (RD) provides grants and low interest loans for utility projects serving financially needy rural communities. Grant eligibility is determined based on sewer service rates and median household income of residents to be served. The average sewer service bill per equivalent residential connection (ERC) must be at least 1.5% of the median household income. Based on census data for the Lead Mines District, RD grant eligibility (based on an ERC of 3,238 gallons/month) would

require a minimum monthly sewer bill of $49.54. At existing sewer rates, the monthly sewer bill for an ERC of 3,238 gallons/month is $28.90, which is well below the RD grant eligibility threshold. It may be unrealistic to increase rates to a level to qualify for grant eligibility.

RD loan rates are determined independently for each project, subject to income level of the proposed users and other project need factors. The typical duration for an RD loan is 40 years.

The Virginia Department of Environmental Quality offers low-interest financing for wastewater projects through the Virginia Clean Water Revolving Loan Fund. Interest rates are often quite favorable (recently in the 2% range), however the loan term is generally only 20 years, therefore annual debt service is often higher than a loan from Rural Development.

Draft planning factors for the proposed project are included in Appendix B to estimate projected system revenues and expenses. The draft planning factors assume a DEQ loan of 3% at 20 years. The County appears to have enough revenue to cover the additional debt service from the loan for this project.

Critical financing info

As previously indicated, relatively few initial users are anticipated; therefore revenues from the new users are well below the expected expenses. Unless a significant source of grant funding is identified, revenue from the overall County wastewater system will be required to offset the additional expenses resulting from the project until such time as the user base in Exit 24 area grows significantly. As noted above, grant funding from Rural Development is not feasible without a significant change in sewer user rates.

VIII. CONCLUSIONS & RECOMMENDATIONS

The following conclusions were derived as part of this evaluation:

1. The County's goal, as indicated in the 1995 "Wythe County Water and Sewer Study", is to provide a centralized wastewater collection and treatment system for the Exit 24 area.
2. Based on conversations with and comments received from the Wythe County Health Department, Jackson Memorial Elementary School, and Department of Environmental Quality Southwest Regional Office, there is a significant amount of support for the project and its long term benefit to the area and the environment.
3. County water service is currently available along Lead Mine Road. Efforts are currently underway for a water extension on US 52. Once complete, the majority of the Exit 24 area will have access to County water, removing a significant barrier to commercial, industrial, and residential development in the Exit 24 area.
4. Centralized wastewater collection and treatment is needed to adequately support the expected growth in a way that minimizes negative environmental impacts to the area and Shorts Creek.
5. The "No Action" alternative does not address the goals of the County. There would be an increased risk of long term environmental issues due to failing septic and individual onsite treatment systems. Economic development in the area may also remain restricted due to the lack of a public wastewater system.
6. **Alternative 2 (Exit 24 Area) is the recommended alternative** because it results in the necessary infrastructure to meet the County goals and is less expensive that the subsequent alternatives.
7. Future expansion of the system is expected to occur as the area develops. Future expansion may take the form of the improvements described in alternatives 3 through 5, or may be modified based on the area needs in the future.
8. The initial sewer revenues possible from the Exit 24 area are not sufficient to offset the costs of the project, therefore countywide revenues must be able to sustain the project debt service and operations costs. Over time, wastewater revenues should rise as the area develops.

Based on the study findings the County should proceed with the following recommendations:

1. Wythe County should consider whether the economic capacity exists to construct the project and pursue any funding sources that may be available.
2. If the County wishes to proceed with the project, a funding application should be submitted to DEQ through the Virginia Clean Water Revolving Loan Fund. Other sources of funding may be considered as appropriate.

Appendix A

DEQ Preliminary Discharge Limits

Keith Lane

From: Wyatt, Frederick (DEQ) [Frederick.Wyatt@deq.virginia.gov]
Sent: Wednesday, September 12, 2012 3:10 PM
To: keith@peed-bortz.com
Cc: Newman, Allen (DEQ)
Subject: FW: Wythe County - Exit 24 Wastewater Improvements - Discharge Limit Request
Attachments: 2012-06-08 Shorts Creek at VDOT Bridge 6006.jpg

Based on existing stream flow information, the preliminary limits are 30/30 mg/l monthly average BOD5/TSS and 5 mg/l monthly average NH3-N and no DO requirement.

Fred M. Wyatt
Environmental Specialist
(276) 676-4810
email: Frederick.Wyatt@deq.virginia.gov

From: Newman, Allen (DEQ)
Sent: Wednesday, September 05, 2012 8:46 PM
To: Wyatt, Frederick (DEQ)
Subject: FW: Wythe County - Exit 24 Wastewater Improvements - Discharge Limit Request

From: Keith Lane [mailto:keith@peed-bortz.com]
Sent: Wednesday, September 05, 2012 8:46 AM
To: Newman, Allen (DEQ)
Subject: RE: Wythe County - Exit 24 Wastewater Improvements - Discharge Limit Request

I just realized that I failed to attach the creek photo. Sorry about that.

Keith

From: Keith Lane [mailto:keith@peed-bortz.com]
Sent: Wednesday, September 05, 2012 8:40 AM
To: allen.newman@deq.virginia.gov
Subject: Wythe County - Exit 24 Wastewater Improvements - Discharge Limit Request

Mr. Newman,

Please find attached a request for speculative discharge limits for the Wythe County Exit 24 wastewater treatment facility. Peed and Bortz is currently working on a PER to provide sewer service to the Exit 24 area (Poplar Camp). Your office recently provided environmental comments as part of the Environmental Review request process.

The wastewater facility is expected to have a capacity of 60,000 gallons/day – potentially built in phases. The proposed discharge location is to Shorts Creek - approximately 1.5 miles upstream of the New River near the Route 607 bridge.

I will give you a call to discuss and to see what additional information that we may provide you. In the meantime, feel free to contact me by email or at any of the numbers below. Thank you very much for your assistance.

Keith

Keith E. Lane, PE
Peed & Bortz, LLC
20 Midway Plaza Drive, Suite 100
Christiansburg, VA 24073
Office (540) 394-3214 <> Fax (540) 394-3215 <> Mobile (540) 250-8379

PEED & BORTZ, L.L.C.
Civil/Environmental Engineers

C. Elvan Peed, P.E. Scott Bortz, P.E. Martin Jansons, P.E.

September 05, 2012

Allen J. Newman, P.E.
Water Permit Manager
DEQ Southwest Regional Office
355-A Deadmore Street
Abingdon, VA 24210

Re: Wythe County: Exit 24 Wastewater Improvements – Speculative Discharge Limits

Dear Mr. Newman:

Peed & Bortz, LLC is working with Wythe County to develop a Preliminary Engineering Report (PER) and Environmental Review (ER) to consider providing sanitary sewer service to the Exit 24 area along I-77. Your office has recently provided comments on the project as part of the agency comment request for the ER.

A new wastewater treatment facility isproposed to be part of this project. It is expected that the facility will be located near the intersection of Routes 607 and 52 near Shorts Creek. We anticipate that the facility would discharge to Shorts Creek just downstream of the 607 bridge. A map is attached showing the proposed discharge point. This point is approximately 1.5 miles upstream of the New River. A photo is also attached of the stream taken from the Route 607 bridge.

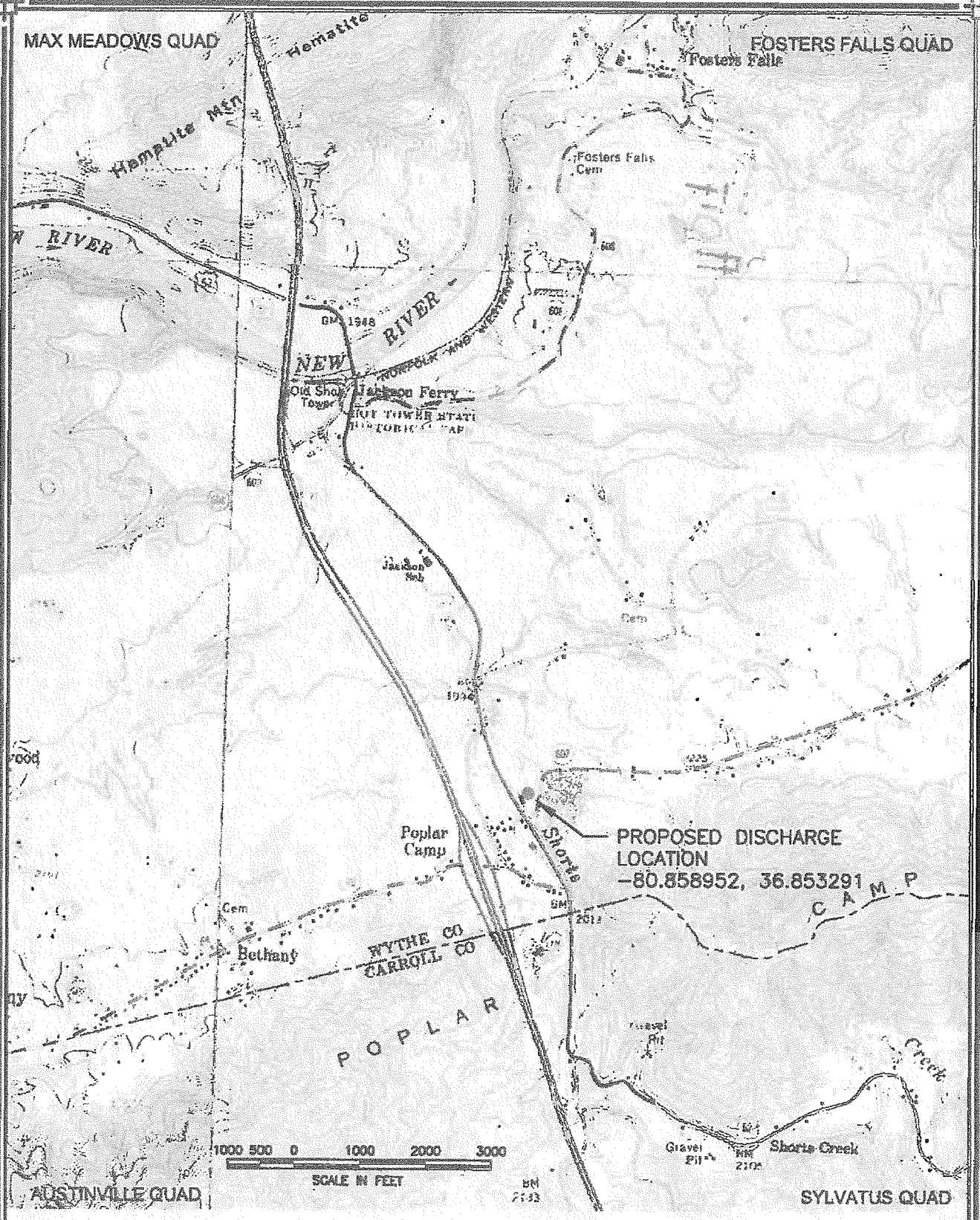
Based on the evaluation performed for the PER, we expect that the design capacity for the treatment facility will be approximately 60,000 gallons per day. It is possible that the project will be phased such that the initial phase is smaller, however the facility would be designed with consideration for expansion.

We would like to discuss this potential discharge location with you and to obtain speculative limits for discharge to Shorts Creek at this location. I will follow this message with a phone call to discuss the project with you in more detail. In the meantime, feel free to contact me at the numbers indicated at the bottom of the page, on my mobile at 540-250-8379, or by email at keith@peed-bortz.com. Thank you very much for your assistance and I look forward to speaking with you.

Sincerely,

Keith E. Lane, P.E.
Partner - Peed & Bortz, LLC

20 Midway Plaza Drive-Suite 100 Christiansburg, Virginia 24073
Phone: 540-394-3214 FAX: 540-394-3215
engineer@peed-bortz.com

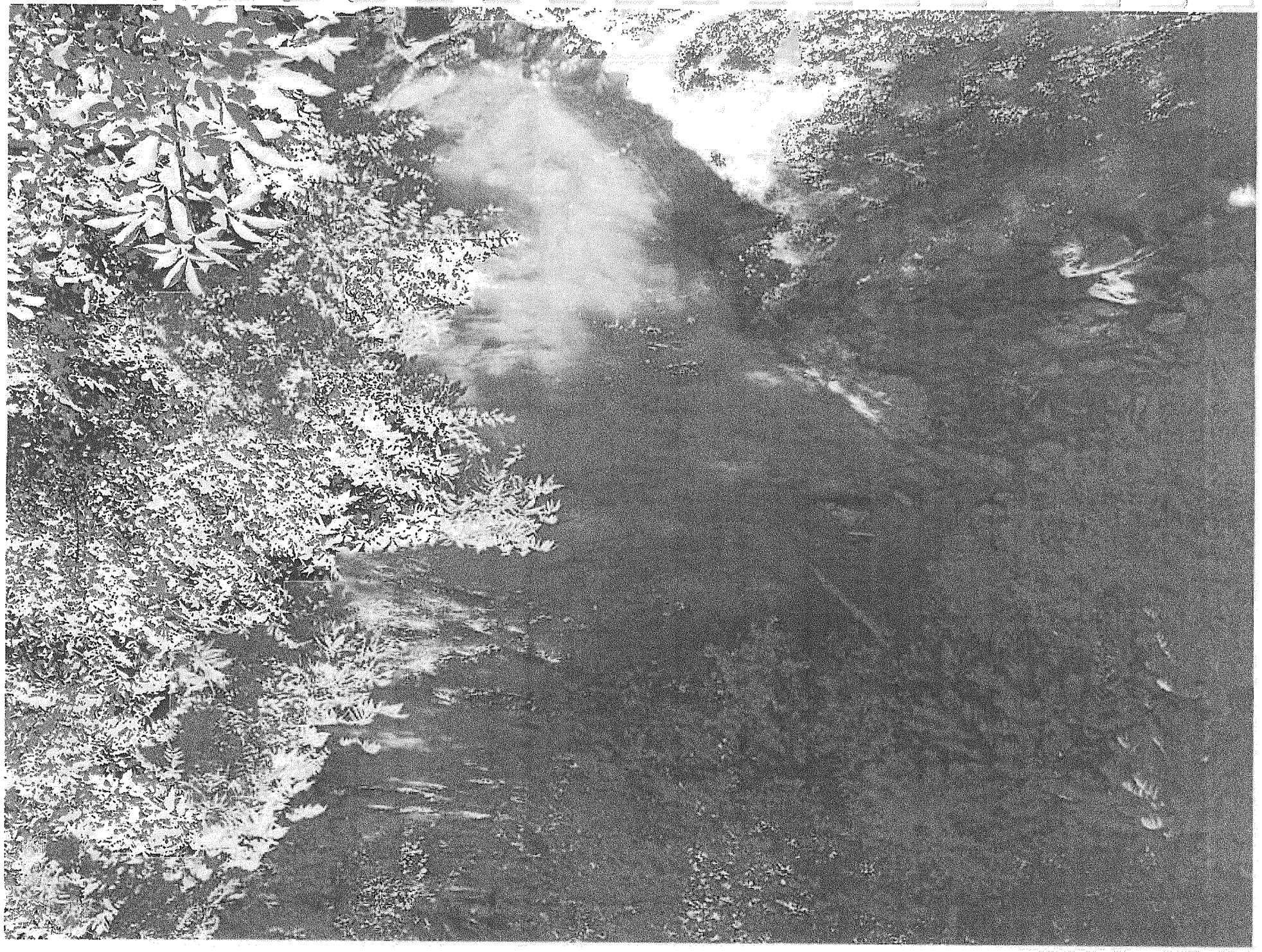


EXIT 24 WASTEWATER IMPROVEMENTS

PROPOSED WWTP DISCHARGE POINT

SEPTEMBER, 2012

Peed & Bortz, L.L.C.
CIVIL & ENVIRONMENTAL ENGINEERS



Appendix B

Project Cost Estimates &
Draft Project Planning Factors

EXIT 24 WASTEWATER IMPROVEMENTS
Alternative 2: Exit 24 Area **<RECOMMENDED ALTERNATIVE>**
Preliminary Cost Estimate
July 2013

CONSTRUCTION

ITEM	QUANTITY	UNITS	PRICE	AMOUNT
8" Sanitary Sewer	5600	L.F.	$50.00	$280,000
8" Gravity Outfall	200	L.F.	$50.00	$10,000
6" Sewer Service	120	L.F.	$35.00	$4,200
4" Sewer Service	500	L.F.	$30.00	$15,000
Manhole	25	Each	$2,500.00	$62,500
6" Cleanout	3	Each	$500.00	$1,500
4" Cleanout	20	Each	$400.00	$8,000
16" Road Crossing	100	L.F.	$200.00	$20,000
4" Service Crossing	100	L.F.	$120.00	$12,000
Pavement Repair	900	S.Y.	$70.00	$63,000
Pump Station	1	Each	$275,000.00	$275,000
WWTP (50,000 GPD)	1	Each	$750,000.00	$750,000
Miscellaneous (10%)	1	L.S.	$150,000	$150,000
TOTAL CONSTRUCTION COST				**$1,651,200**

RELATED COSTS

Engineering, Basic (Excl. WWTP)	9.8	%		$88,300
Engineering, Basic (WWTP)	10.8	%		$81,000
Engineering, Inspection	195	days @	$400.00	$78,000
Engineering, Other				
Preliminary Engineering Report				$5,000
Environmental Report				$2,500
Permits				$3,000
Easement Assistance				$2,000
Legal				$5,000
Bond Counsel				$5,000
Property Acquisition				$100,000
Contingencies	5.00	%		$82,600
TOTAL RELATED COST				**$452,400**
TOTAL PROJECT COST				**$2,103,600**

OPERATIONS AND MAINTENANCE

Labor		
Pump Station	365 days x 0.5 hours @ $24/hr	$4,380
WWTP	365 days x 4 hours @ $24/hr	$35,040
Electricity		
Pump Station	12 months @ $130/month	$1,560
WWTP	12 months @ $900/month	$10,800
Consumables, Chemicals, and Misc. Expenses		
WWTP	12 months @ $700/month	$8,400
Parts & Equipment Replacements		
Pump Station	@ 0.5% of construction cost per year	$1,375
WWTP	@1.5% of construction cost per year	$11,250
Transportation		
Mileage	365 days x 20 miles @ $0.55/mile	$4,015
Administration		
Administration	12 months x 6 hours @ $40/hr	$2,880
TOTAL ESTIMATED YEARLY O&M		$79,700

EXIT 24 WASTEWATER IMPROVEMENTS

Alternative 3: Extended Gravity Area

Preliminary Cost Estimate
July 2013
Note: Estimated costs for this alternative include the costs of Alternative 2

CONSTRUCTION

ITEM	QUANTITY	UNITS	PRICE	AMOUNT
8" Sanitary Sewer	11950	L.F.	$50.00	$597,500
8" Gravity Outfall	200	L.F.	$50.00	$10,000
6" Sewer Service	120	L.F.	$35.00	$4,200
4" Sewer Service	700	L.F.	$30.00	$21,000
Manhole	50	Each	$2,500.00	$125,000
6" Cleanout	3	Each	$500.00	$1,500
4" Cleanout	28	Each	$400.00	$11,200
16" Road Crossing	150	L.F.	$200.00	$30,000
4" Service Crossing	200	L.F.	$120.00	$24,000
Pavement Repair	1050	S.Y.	$70.00	$73,500
Pump Station	1	Each	$275,000.00	$275,000
WWTP (50,000 GPD)	1	Each	$750,000.00	$750,000
Miscellaneous (10%)	1	L.S.	$192,000	$192,000
TOTAL CONSTRUCTION COST				**$2,114,900**

RELATED COSTS

Engineering, Basic (Excl. WWTP)	9.6	%		$131,000
Engineering, Basic (WWTP)	10.6	%		$79,500
Engineering, Inspection	195	days @	$400.00	$78,000
Engineering, Other				
Preliminary Engineering Report				$5,000
Environmental Report				$2,500
Permits				$3,000
Easement Assistance				$3,000
Legal				$5,000
Bond Counsel				$5,000
Property Acquisition				$120,000
Contingencies	5.00	%		$105,700
TOTAL RELATED COST				**$537,700**
TOTAL PROJECT COST				**$2,652,600**

OPERATIONS AND MAINTENANCE

Labor		
Pump Station	365 days x 0.5 hours @ $24/hr	$4,380
WWTP	365 days x 4 hours @ $24/hr	$35,040
Electricity		
Pump Station	12 months @ $130/month	$1,560
WWTP	12 months @ $900/month	$10,800
Consumables, Chemicals, and Misc. Expenses		
WWTP	12 months @ $700/month	$8,400
Parts & Equipment Replacements		
Pump Station	@ 0.5% of construction cost per year	$1,375
WWTP	@1.5% of construction cost per year	$11,250
Transportation		
Mileage	365 days x 20 miles @ $0.55/mile	$4,015
Administration		
Administration	12 months x 6 hours @ $40/hr	$2,880
TOTAL ESTIMATED YEARLY O&M		$79,700

EXIT 24 WASTEWATER IMPROVEMENTS
Alternative 4: US 52 Extended Area
Preliminary Cost Estimate
July 2013
Note: Estimated costs for this alternative include the costs of Alternative 2

CONSTRUCTION

ITEM	QUANTITY	UNITS	PRICE	AMOUNT
8" Sanitary Sewer	11800	L.F.	$50.00	$590,000
8" Gravity Outfall	200	L.F.	$50.00	$10,000
6" Sewer Service	160	L.F.	$35.00	$5,600
4" Sewer Service	625	L.F.	$30.00	$18,750
Manhole	43	Each	$2,500.00	$107,500
6" Cleanout	4	Each	$500.00	$2,000
4" Cleanout	25	Each	$400.00	$10,000
4" Force Main	2700	L.F.	$30.00	$81,000
16" Road Crossing	150	L.F.	$200.00	$30,000
16" I-77 Crossing	350	L.F.	$300.00	$105,000
4" Service Crossing	200	L.F.	$120.00	$24,000
Pavement Repair	900	S.Y.	$70.00	$63,000
Pump Station	2	Each	$275,000.00	$550,000
WWTP (50,000 GPD)	1	Each	$750,000.00	$750,000
Miscellaneous (10%)	1	L.S.	$235,000	$235,000
TOTAL CONSTRUCTION COST				**$2,581,850**

RELATED COSTS

Engineering, Basic (Excl. WWTP)	9.6	%		$175,900
Engineering, Basic (WWTP)	10.6	%		$79,500
Engineering, Inspection	195	days @	$400.00	$78,000
Engineering, Other				
Preliminary Engineering Report				$5,000
Environmental Report				$2,500
Permits				$3,000
Easement Assistance				$3,000
Legal				$5,000
Bond Counsel				$5,000
Property Acquisition				$120,000
Contingencies	5.00	%		$129,100
TOTAL RELATED COST				**$606,000**
TOTAL PROJECT COST				**$3,187,850**

OPERATIONS AND MAINTENANCE

Labor		
Pump Stations	365 days x 1 hours @ $24/hr	$8,760
WWTP	365 days x 4 hours @ $24/hr	$35,040
Electricity		
Pump Station	12 months @ $130/month x 2	$3,120
WWTP	12 months @ $900/month	$10,800
Consumables, Chemicals, and Misc. Expenses		
WWTP	12 months @ $700/month	$8,400
Parts & Equipment Replacements		
Pump Station	@ 0.5% of construction cost per year	$2,750
WWTP	@1.5% of construction cost per year	$11,250
Transportation		
Mileage	365 days x 25 miles @ $0.55/mile	$5,019
Administration		
Administration	12 months x 6 hours @ $40/hr	$2,880
TOTAL ESTIMATED YEARLY O&M		$88,019

EXIT 24 WASTEWATER IMPROVEMENTS

Alternative 5: Shot Tower Area

Preliminary Cost Estimate
July 2013
Note: Estimated costs for this alternative include the costs of Alternative 4

CONSTRUCTION

ITEM	QUANTITY	UNITS	PRICE	AMOUNT
8" Sanitary Sewer	12400	L.F.	$50.00	$620,000
8" Gravity Outfall	200	L.F.	$50.00	$10,000
6" Sewer Service	160	L.F.	$35.00	$5,600
4" Sewer Service	625	L.F.	$30.00	$18,750
Manhole	44	Each	$2,500.00	$110,000
6" Cleanout	4	Each	$500.00	$2,000
4" Cleanout	25	Each	$400.00	$10,000
4" Force Main	5200	L.F.	$30.00	$156,000
12" Road Crossing	50	Each	$150.00	$7,500
16" Road Crossing	150	Each	$200.00	$30,000
16" I-77 Crossing	350	L.F.	$300.00	$105,000
4" Service Crossing	100	L.F.	$120.00	$12,000
Pavement Repair	900	S.Y.	$70.00	$63,000
Pump Station	3	Each	$275,000.00	$825,000
WWTP (50,000 GPD)	1	Each	$750,000.00	$750,000
Miscellaneous (10%)	1	L.S.	$272,000	$272,000
TOTAL CONSTRUCTION COST				**$2,996,850**

RELATED COSTS

Engineering, Basic (Excl. WWTP)	9.6	%		$215,700
Engineering, Basic (WWTP)	10.6	%		$79,500
Engineering, Inspection	195	days @	$400.00	$78,000
Engineering, Other				
Preliminary Engineering Report				$5,000
Environmental Report				$2,500
Permits				$3,000
Easement Assistance				$3,000
Legal				$5,000
Bond Counsel				$5,000
Property Acquisition				$120,000
Contingencies	5.00	%		$149,800
TOTAL RELATED COST				**$666,500**
TOTAL PROJECT COST				**$3,663,350**

OPERATIONS AND MAINTENANCE

Labor		
Pump Stations	365 days x 1.5 hours @ $24/hr	$13,140
WWTP	365 days x 4 hours @ $24/hr	$35,040
Electricity		
Pump Station	12 months @ $130/month x 3	$4,680
WWTP	12 months @ $900/month	$10,800
Consumables, Chemicals, and Misc. Expenses		
WWTP	12 months @ $700/month	$8,400
Parts & Equipment Replacements		
Pump Station	@ 0.5% of construction cost per year	$4,125
WWTP	@1.5% of construction cost per year	$11,250
Transportation		
Mileage	365 days x 30 miles @ $0.55/mile	$6,023
Administration		
Administration	12 months x 6 hours @ $40/hr	$2,880
TOTAL ESTIMATED YEARLY O&M		$96,338

Exit 24 Wastewater Improvements
Wythe County, Virginia

Project Planning Factors - Existing Rates

Total Project Cost

Estimated Grants	*Rural Development*	$0
	Local Funds (Connection Fee)	$0
Loan Amount	*DEQ VCWRLF*	$2,103,600
		$2,103,600

Monthly Rate Schedule

Residential Users

First	*3,000*	gallons	at	*22.00*	per	*minimum*	gallons
Next		gallons	at		per		gallons
Next		gallons	at		per		gallons
All over	*3,000*	gallons	at	*6.90*	per	*1,000*	gallons

per ERC *3,238* gallons / month $ **23.64** per month

Non-Residential Users

First	*4,000*	gallons	at	*55.00*	per	*minimum*	gallons
Next		gallons	at		per		gallons
Next		gallons	at		per		gallons
Next		gallons	at		per		gallons
Next		gallons	at		per		gallons
All over	*4,000*	gallons	at	*8.85*	per	*1,000*	gallons

Projection of Use and Income

Residential

Existing Residential Connections:	576	
Expected Monthly Revenue:	$12,894	
Proposed New User Revenue:	$374	(17 Users @ $22/month)

Commercial

Existing Commercial Connections:	87	
Expected Monthly Revenue:	$35,450	
Proposed New User Revenue:	$683	(1 Commercial User @ 75,000 gal/month)

Industrial "Enterprise Zone"

Existing Industrial Connections:	5	
Expected Monthly Revenue:	$63,152	
Proposed New User Revenue:	$0	

Exit 24 Wastewater Improvements
Wythe County, Virginia

Project Planning Factors - Existing Rates

Total Monthly Revenues (sales)

Existing	$111,496
Proposed	$1,057
Total	**$112,553**

Annual Revenues (Monthly revenue x 12) $1,350,634

Annual Revenue

Total Annual Revenues (sales) **$1,350,634**

Annual Budget Worksheet

Item	Current	Additional	Proposed
O&M Cost	*464,859*	*79,700*	*544,559*
Debt Service			
Fort Chiswell (RD Series 1	138,864		*138,864*
Austinville (VRA 2004 Bor	5,239		*5,239*
Reed Creek Inter. (Suntru:	442,583		*442,583*
Grahams Forge Phase II	0		*0*
Grahams Forge Phase III	68,494		*68,494*
DEQ (3% for 20 years)		141,395	*141,395*
Totals	1,120,039	221,095	1,341,134

Sewer Sales Revenues	**1,350,634**
Other Funds (General Fund)	0
Balance	**9,500**

Appendix C

Shorts Creek DEQ Impaired Waters Summary

2012 Impaired Waters

Category 4 & 5 by Basin and Stream Name*

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

New River Basin

Cause Group Code: **N08R-03-BAC - Shorts Creek and Unnamed Tributary**

Location:	This segment includes the lower reach of Shorts Creek and continues until it enters New River at Jackson Ferry. This segment also includes an unnamed tributary to Shorts Creek that enters at Jackson Ferry and flows west from Rackettown.
City/County	Carroll Co., Wythe Co.
Use(s):	Recreation
Cause(s) / VA Category:	Escherichia coli / 5A, Fecal Coliform / 5A

The AWQM station, 9-SRT000.12, had a 100% exceedance of the E. coli water quality standard.

Assessment Unit	Water name	Location Description	Cause Category	Cause Name	Cycle First Listed	TMDL Schedule	Size
VAS-N08R_SRT01B04	Shorts Creek	The lower reach of Shorts Creek, enters New River at Jackson Ferry, WQS Section 2, vi.	5A	Escherichia coli	2010	2016	6.73
VAS-N08R_XEE01A06	Shorts Creek unnamed tributary	Flows west from Rackettown and enters Shorts Creek at Jackson Ferry, WQS Section 2.	5A	Escherichia coli	2010	2016	3.74

Shorts Creek and Unnamed Tributary

Recreation

	Estuary (sq. miles)	Reservoir (acres)	River (miles)
Escherichia coli / 5A Total impaired size by water type:			10.47

Assessment Unit	Water name	Location Description	Cause Category	Cause Name	Cycle First Listed	TMDL Schedule	Size
VAS-N08R_SRT01B04	Shorts Creek	The lower reach of Shorts Creek, enters New River at Jackson Ferry, WQS Section 2, vi.	5A	Fecal Coliform	2004	2016	6.73
VAS-N08R_XEE01A06	Shorts Creek unnamed tributary	Flows west from Rackettown and enters Shorts Creek at Jackson Ferry, WQS Section 2.	5A	Fecal Coliform	2006	2016	3.74

Recreation

	Estuary (sq. miles)	Reservoir (acres)	River (miles)
Fecal Coliform / 5A Total impaired size by water type:			10.47

Sources:

- Animal Feeding Operations (NPS)
- Grazing in Riparian or Shoreline Zones
- Livestock (Grazing or Feeding Operations)

* Narrative descriptions, location and city/county describe the entire extent of the impairment. Sizes may not represent the total size of the impairment.

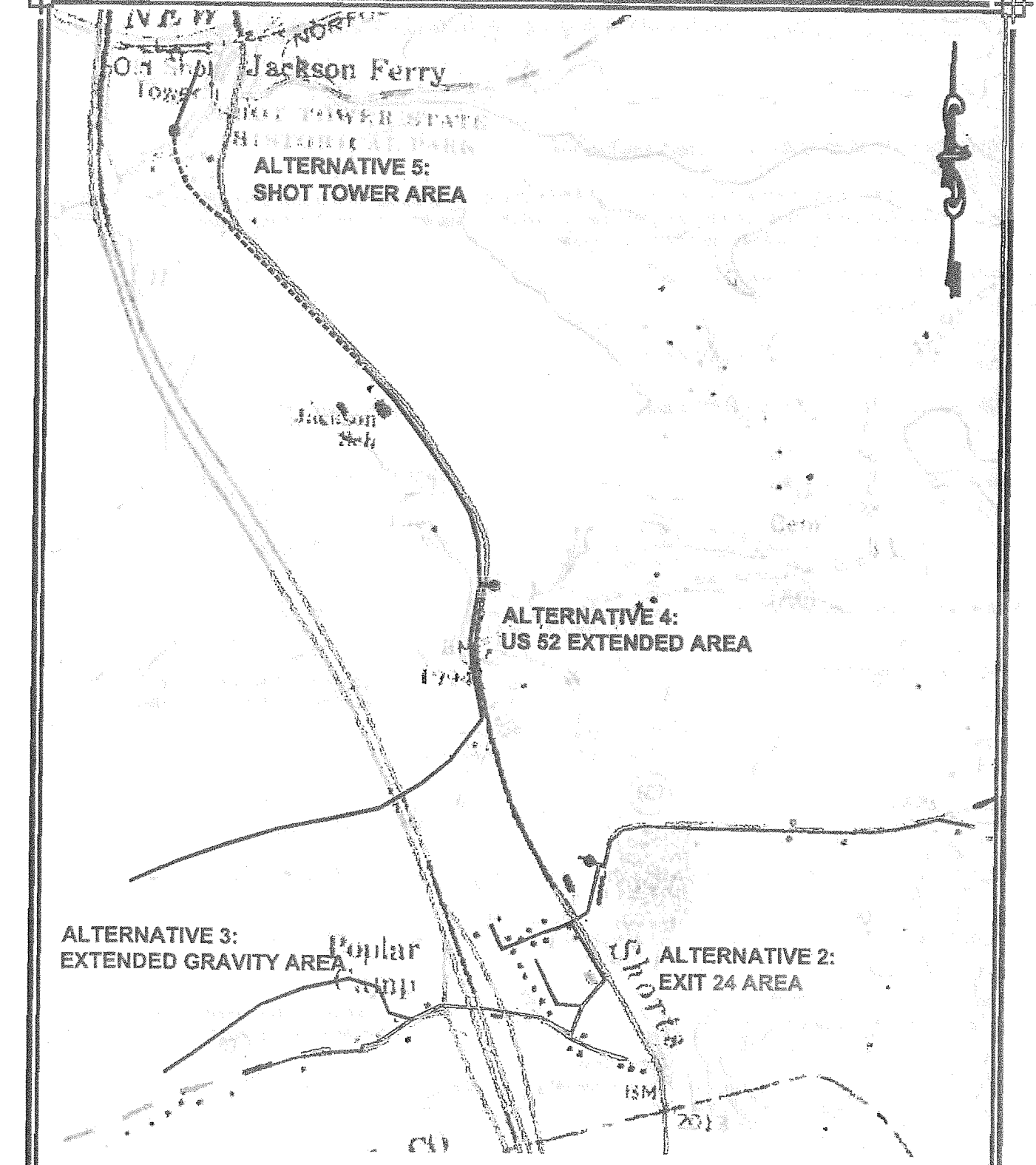
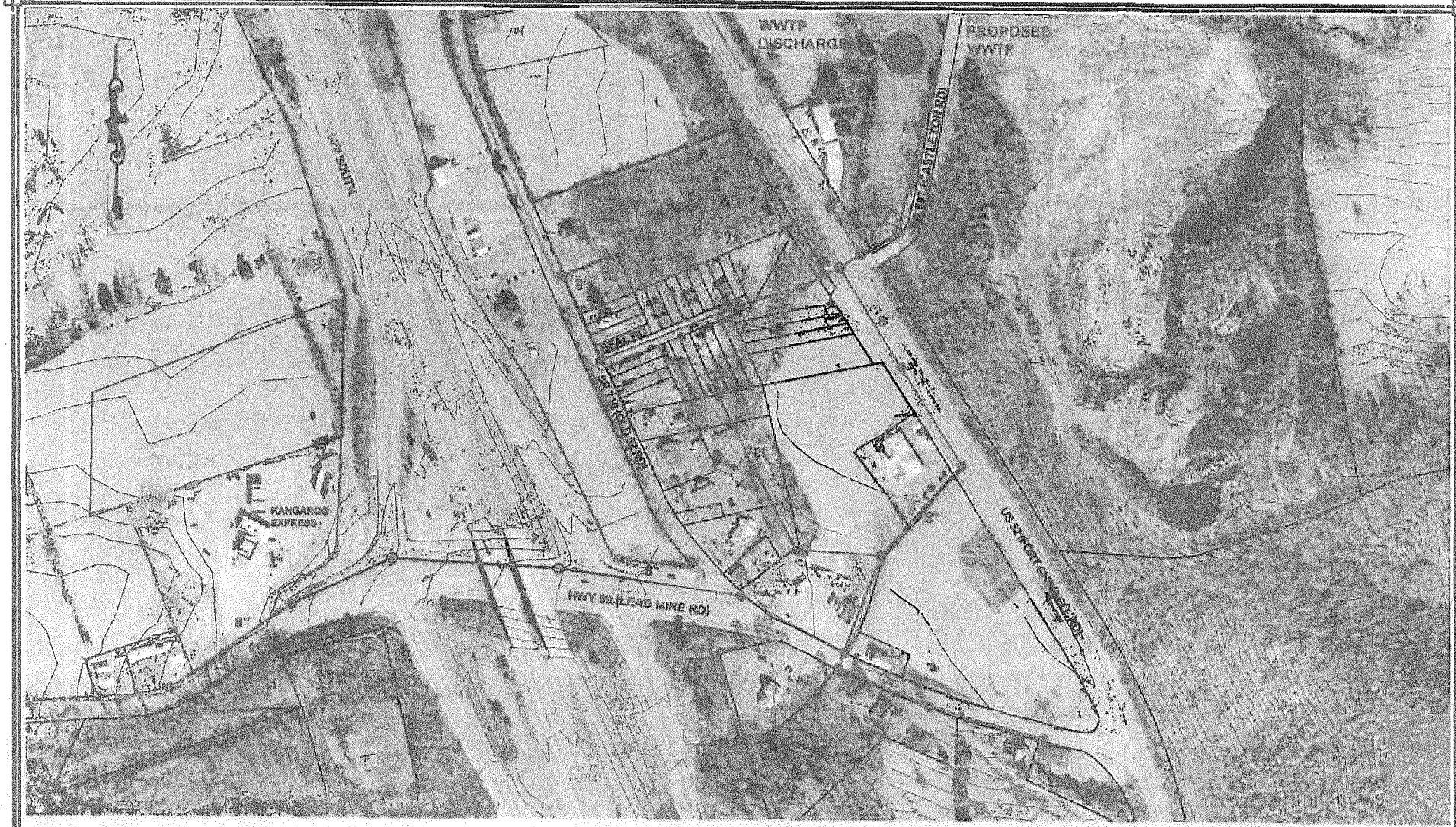


EXHIBIT A - STUDY AREA
WYTHE COUNTY EXIT 24
WASTEWATER IMPROVEMENTS

JULY 2013

Peed & Bortz, L.L.C.
CIVIL & ENVIRONMENTAL ENGINEERS



1" = 200'

Peed & Bortz, L.L.C.
CIVIL & ENVIRONMENTAL ENGINEERS

EXHIBIT B - ALTERNATIVE 2: EXIT 24 AREA

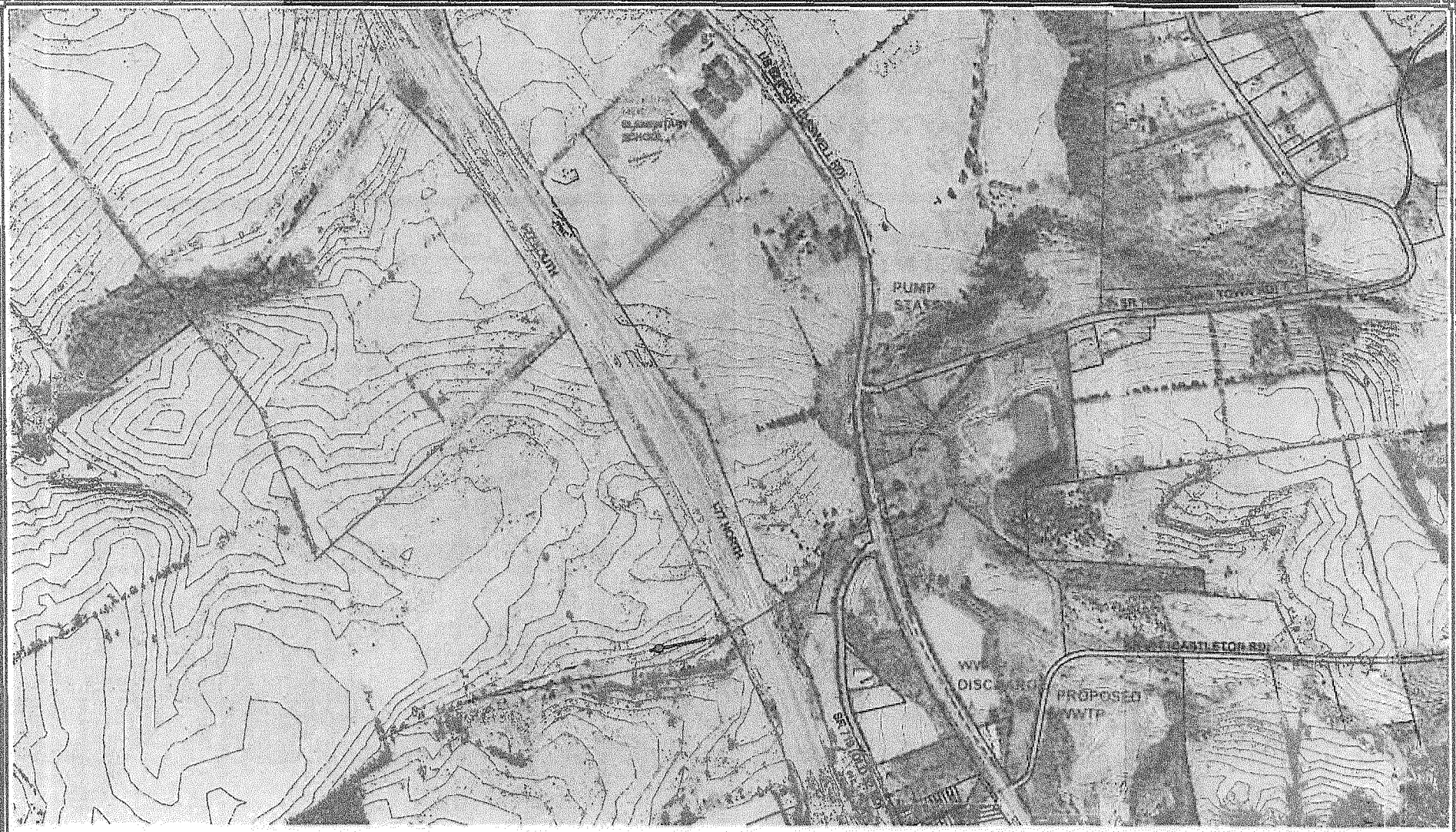
WYTHE COUNTY EXIT 24 WASTEWATER IMPROVEMENTS

JULY 2013

1" = 250'

EXHIBIT C - ALTERNATIVE 3: EXTENDED GRAVITY AREAS
WYTHE COUNTY EXIT 24 WASTEWATER IMPROVEMENTS
JULY 2013

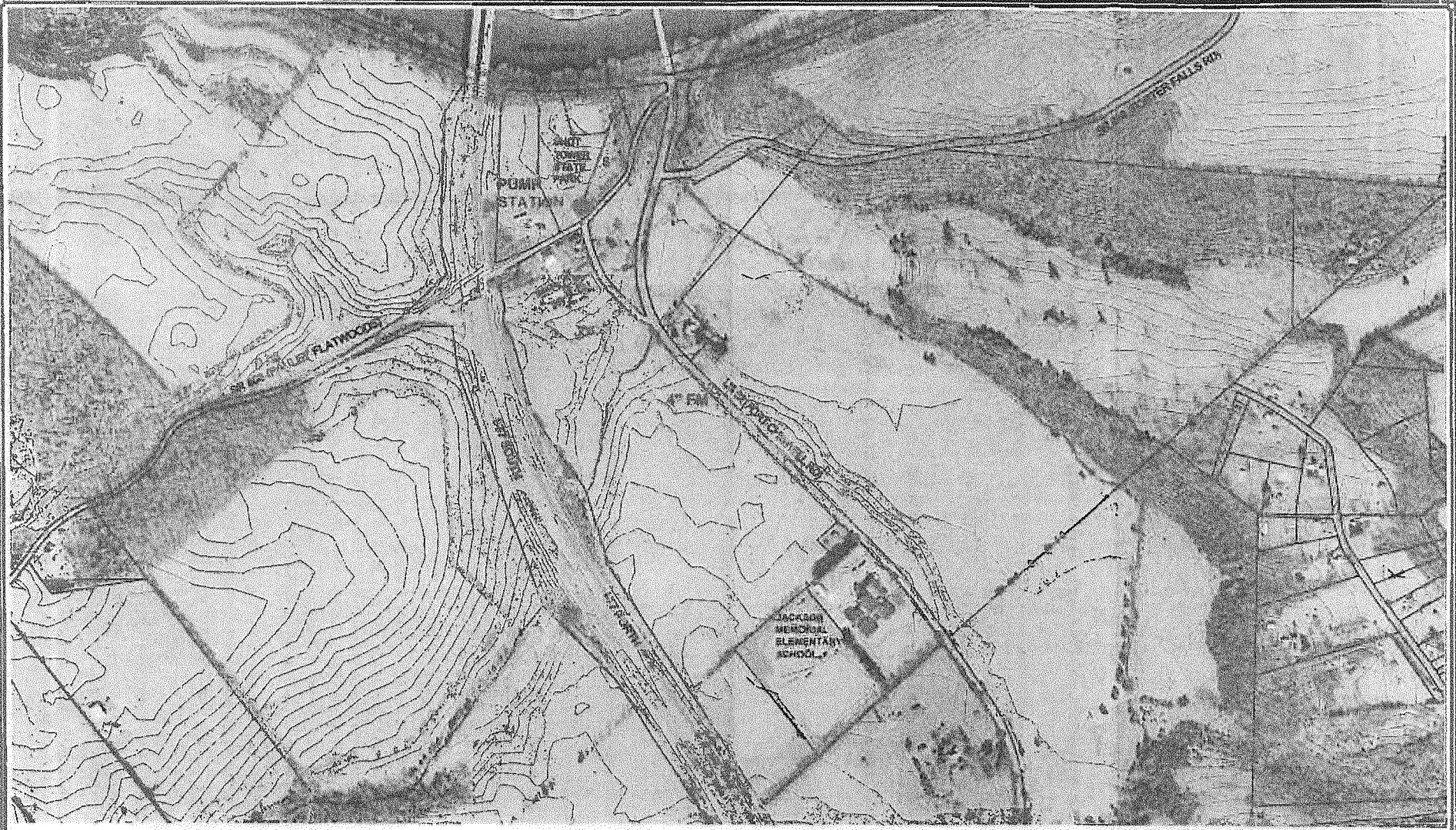
Peed & Bortz, L.L.C.
CIVIL & ENVIRONMENTAL ENGINEERS



1" = 500'

EXHIBIT D - ALTERNATIVE 4: US52 EXTENDED AREA
WYTHE COUNTY EXIT 24 WASTEWATER IMPROVEMENTS
JULY 2013

Peed & Bortz, L.L.C.
CIVIL & ENVIRONMENTAL ENGINEERS



1" = 500'

EXHIBIT E - ALTERNATIVE 5: SHOT TOWER AREA

WYTHE COUNTY EXIT 24 WASTEWATER IMPROVEMENTS

JULY 2013

Peed & Bortz, L.L.C.
CIVIL & ENVIRONMENTAL ENGINEERS